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AT&T reaches out

Tools permit limited file exchange
between 3B line and IBM mainframes

By Paul Harnischfeger
CW Staff

LINCOLN, N.J. — AT&T last week announced its first set of tools that enables an AT&T 3B computer to communicate with an IBM mainframe.

Included in a deluge of AT&T product announcements were two models of the 3B, four communications products for the 3B line and a version of AT&T's Unix System V Release 2 that runs under IBM's VM operating system (see story page 6).

The communications products include two controller emulation packages, a file transfer program and a communications processor. The products provide IBM 3274 controller and 3278 terminal emulation and supply file transfer capabilities between a 3B system and an IBM mainframe.

The communications products were considered essential to AT&T's strategy for selling its computers to large companies (see story page 6). The announcements establish the 3B line as a competitor to Digital Equipment Corp.'s Microvax II supermicro

See AT&T page 6

IBM gives up SBS for 16% of MCI

By Bryan Wilkins
Washington Bureau

WASHINGTON, D.C. — IBM last week initiated a major push into telecommunications by selling its 60% ownership interest in Satellite Business Systems to MCI Communications Corp. in return for an immediate 16% stake in MCI, the second largest long-distance carrier. The agreement permits IBM to acquire up to 30% of MCI during the next three years, and IBM indicated it will invest up to \$400 million in MCI's network expansion plans.

William McGowan, MCI's president and chief executive officer, said the two companies will align their businesses to target large business users. These users, he said, want to integrate their data communications, data processing and voice links.

IBM and MCI claimed MCI's acquisition of SBS would yield the largest digital communications network in the world, comprising MCI's optical fiber and digital microwave systems and SBS' digital satellite capacity.

"The combination of MCI and IBM is ideal," McGowan said, adding that the deal would create a new global communications network.

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TOP OF THE NEWS

Computer crimes against the U.S. government are typically motivated by personal financial crises or job dissatisfaction. **Page 2.**

Following the murder of two Wang employees in El Salvador, some companies are reassessing aspects of international business travel. **Page 4.**

Software International unveiled a series of products designed as an initial step toward integrating its mainframe applications line. **Page 7.**

Both NCR and Charles River Data Systems unveiled supermicrocomputers that are based on Motorola's 68020 microprocessor. **Page 14.**

Amdahl supercomputers bow

By Jeffry Bosker
CW West Coast Bureau

SUNNYVALE, Calif. — Amdahl Corp. last week extended its supercomputer line both upward and downward by announcing two additional vector processors, one with performance exceeding one billion floating-point operations per second.

With the introduction of Models 1400 and 500, Amdahl's family of IBM-compatible number crunchers, built by Japan-based Fujitsu Ltd., now consists of four machines. The other two are the Models 1100 and 1200, announced last September.

Rated at 133 Mflops, the entry-level 500 reportedly provides exactly half the internal throughput of Amdahl's 1100

and roughly 40% the performance of Cray Research, Inc.'s X/MP-1.

The top-of-the-line 1400, meanwhile, reportedly executes 1.14 Gflops, compared with 533 Mflops for the 9-month-old 1200, and outperforms the X/MP-1 by approximately 400%.

Each of the four Amdahl machines runs the same software and can be upgraded in the field to its next larger sister system, according to the company.

Although the four machines have nearly identical machine cycle times of 7 or 7.5 nsec, the 1400 produces eight vector results per cycle, compared with four, two and one for the 1200, 1100 and 500, respectively, a source said.

Like the middle systems they bracket, the 1400 and 500 are expected to be the most popular. **See VECTOR page 4**

INDUSTRY SPOTLIGHT

European firms take varied aim at U.S. market

By Peter Bartlett
CW Staff

Japanese manufacturers approach the U.S. market for computer equipment from a position of strength: They control or can at least defend their own domestic markets.

The same cannot be said of the leading European vendors, which come to the lucrative U.S. market from a continent where IBM has carved out a dominant position and where other U.S. manufacturers have claimed substantial market shares.

The barriers erected by the Postal Telephone and Telegraph authorities have served to protect somewhat the telecommunications markets for indigenous vendors in each country. However,

commercial computer customers have welcomed the leading U.S. manufacturers to Europe with open arms, according to statistics from IDC Europe, Ltd., the London-based office of International Data Corp.

According to a report published last year by IDC Europe, 86% of all large-scale systems installed in Western Europe at the end of 1983 were manufactured by IBM. No European vendor claimed more than 5% of medium-scale system installations, while IBM, Digital Equipment Corp., Hewlett-Packard Co. and Wang Laboratories, Inc. manufactured 40% of the total base.

The market for small-scale systems — those accommodating one to 16 users and ranging from the IBM Personal Comput-

ers to the DEC VAX-11/730 — was more diverse: DEC had the leading share of installed systems, at 11%, while European vendors' shares of the installed systems ranged from 4% to 6%.

Even the small-scale systems market seemed to be adopting an IBM trend. Ing. C. Olivetti & Co. shipped the greatest number of units in 1983, but IBM, which shipped 3,600 fewer units than Olivetti, made more money than any other vendor.

Nonetheless, six major European vendors with revenue ranging from more than \$1 billion to more than \$16 billion have established subsidiaries in the U.S. in the hope of capturing shares of the largest market in the world.

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NEWS

Federal DP crooks profiled

Stress, financial problems tagged as primary catalysts

By Hilah Dotis
CW Washington Bureau

"I had personal problems because I was 190,000 in debt. But I had also worked my butt off for them, and they passed me over for a promotion. I was good and deserved more... I decided to get back at them."

— A federal program manager and perpetrator of a computer crime

WASHINGTON, D.C. — Perpetrators of computer crimes against the U.S. government typically steal money in response to stress or a crisis, such as a financial problem or disgruntlement on the job, according to a government study based on confidential interviews with 46 computer criminals.

Three quarters of the computer criminals interviewed by the U.S. Department of Health and Human Services' (HHS) inspector general fit that profile. The others were tempted by accidental discovery of a vulnerability in the system or influenced by boredom or free time, the study said.

"Connie," for example, was a terminal operator for a state program who enjoyed exploring the computer system. She discovered there were no security screens for making emergency payments under \$1,000. "When it started I was playing on the terminal on a break. I typed in my friend's name and then I hit return; it was processed, I could have canceled it, but I didn't," she reported.

No significant crime barrier

Not surprisingly, most perpetrators said computer security and internal controls in their offices were weak and did not pose significant barriers to their crimes. "They described identification numbers and passwords as simplistic, edits and screens as known and therefore avoidable and supervision as lax or naive regarding automated systems," the study said.

According to a state claims examiner, "Everyone had an ID number, and there was a password to bring the system up. But the codes and ID numbers were [posted] on the wall, so everyone and anyone could see them. No one cared."

HHS Inspector General Richard P. Kussnerow reported that the average loss per computer crime was \$46,000, and about one-fifth of the cases exceeded \$100,000 in losses.

A key finding of the study was that the perpetrators were insiders — federal employees or employees of state or private agencies administering federal programs — and not outside hackers, in general, they were considered good employees, it said.

Kussnerow reported that one-fifth of the perpetrators had a prior criminal record. He recommended that government managers reevaluate personnel security policies for persons in positions of trust, including all jobs with access to payroll and payment data.

In a related development, Kussnerow reportedly has begun a computer matching program to identify HHS employees who have jobs dealing with sensitive data and have criminal records.

Typically, the perpetrators committed the crime by manipulating input data to trigger the issuance of government checks, and most were aided by co-conspirators who provided a false ID and/or received the checks, the report said.

Recommended actions

To combat the problems highlighted in the interviews, Kussnerow's report recommended the following actions:

- Routinely interview perpetrators of computer crimes to better understand their motivations, how their crimes were committed and the effectiveness of security.

- Strengthen computer security by enforcing "personal accountability" for actions taken on automated payment systems; limit user access to only those programs, records or transactions required by the user's job; and periodically review the adequacy of all computer security controls.

- Security specialists should educate program managers about the importance of computer security, and the existence of security controls should be advertised to employees to indicate that "someone is indeed watching."

- Because federal agencies rely on state and private agency computers for many payment programs, vulnerabilities at those installations should be addressed with the same vigor as those in federal systems."

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NEWS

El Salvador murders prompt review of business travel

By Gilbert Wilber
CW Staff

Some major computer vendors are rethinking aspects of overseas business travel after last month's murder in El Salvador, Inc. American employees of IBM, for example, had agreed little could be done to guarantee safety from terrorist and guerrilla attacks.

A Wang spokesman said the Lowell, Mass.-based office automation vendor will consider ways to schedule future meetings on U.S. rather than foreign soil since some of its distribution companies are located in politically volatile countries.

"In light of these incidences, we're looking at alternatives that would not expose Wang employees to danger," spokesman Peter Connell said. "We certainly want to service our customers around the world, but we will look at safer ways to do it."

Wang's director of distributor sales in Central America, George Vinay of Coral Gables, Fla., and international marketing consultant Robert Alvares of Lexington, Mass., were among 13 people killed on the evening of June 19 when several gunmen opened fire on a sidewalk cafe in San Salvador. Also killed were three Salvadoran employees of Interdata, the local firm contracted to distribute Wang products in El Salvador.

Vinay and Alvares had made the trip to train Interdata representatives in the sale and marketing of Wang's new Pace data base software in El Salvador. Connell said both had traveled extensively on Wang business in Central and South America in the past. "These men were frequent travelers, and they knew the situation [in El Salvador]," he said.

Few other companies said they planned to scale back, relocate or renegeable business travel in politically unstable countries. But some firms

planned smaller changes, such as Data General Corp.'s revision of employee travel guidelines to include safety-related "do and don'ts" in politically volatile nations.

"It's one way of providing some guidance to our employees," said Harvey Burrill, director of corporate security for Westboro, Mass.-based DG. "But we don't want overreaction, either. We certainly want to protect our employees and assets, but without an awful lot of justification. We don't want to turn our overseas sales offices into Fort Knox. We don't want to alarm employees and scare business off."

"The best you can do is pray"

Burstein conceded that there was little a company could have done to anticipate the San Salvador shootings, which U.S. officials said they believe were the work of leftist guerrillas and had no relation to Wang's activities in the country. "Sometimes, when dealing with terrorists, the best you can do is pray," he said.

DG sales and marketing representatives meet often in foreign countries with DG distributors such as Team Computer and Systems Ltd. in Israel and Bedouin Trading Est. in Kuwait, spokesman Ken Donoghue said. "Overseas distributors are extensions of our sales force, so it's important that they're kept up-to-date on what's happening in the company," he said. "If our employees felt they were in any danger, they would be called back."

IBM's policy of staffing its international sales offices with native employees means few American IBM employees would be in the situation of Wang's Alvares and Vinay, an IBM spokeswoman said. Employees of IBM distributors are normally trained by members of the nearest IBM sales office in the region, she said.

Corporate monitoring of political conditions around the globe is an ongoing process, according to Bob Marshall, director of corporate security for Morrisville, N.J.-based AT&T International, Inc. Marshall declined to discuss specific AT&T travel policies after the San Salvador shootings, but he brought security from the back to the front burner in people's minds. Every company has to make its own analysis of each situation, weighing the importance of the business vs. safety considerations.

Richard Cole, author of the book *Executive Security* and security director for a Fortune 500 manufacturer, said companies should be aware of how their presence in a given country is perceived as well as be aware of the level of political unrest there.

"Security requires a more holistic approach than just knowing what nations are terrorist-prone," he said. "Know who you are, what it is you're selling, your marketplace and what is and is not acceptable there."

Cole said changes in the way companies handle business in such countries may come from the bottom up, with employees wary of travel in specific areas requesting not to be sent there.

Belden Menkus, a Middleville, N.J., management consultant specializing in security, predicted that increased terrorist violence will drive U.S. companies out of some nations in the future.

"There comes a point when some of this [business] just isn't worth doing any more," he said. "I know one company that is about to walk away from a major investment in Guatemala. What happened to the Wang employees suggests it might be wise for people to rethink the way they're doing business in the Middle East, Northern Ireland and Central and South America."

VECTOR

from page 1

the 500 and 1400 have access to 83 vector processing instructions. Otherwise, however, the two additions to AMDahl's supercomputer family use the same IBM 370-class instruction set and architecture as IBM or IBM-compatible scalar mainframes such as the 3080 and AMDahl's 580 series, according to the source.

The resulting compatibility with Big Blue's large-scale, general-purpose systems reportedly enables the four vector processors to be attached directly to 370-style disk systems, terminals and other peripherals.

Applications development aid

IBM compatibility also aids the AMDahl supercomputers in the area of applications development, the company said.

With the 500 and 1400, as with the rest of AMDahl's vector processing line, programs are typically written in Fortran on an IBM or IBM-compatible scalar system running under MVS or MVS/XA, the company said. After the raw source code is created, it is run through a scalar compiler, where it is converted from IBM Fortran to its AMDahl counterpart. The compiler constitutes one of seven applications development utilities that complement the 500 and 1400's Vector Processing System (VPS) control program.

Other VPS utilities reportedly enable the compiled Fortran code to be translated from scalar statements or subroutines to vector instructions and then to be debugged and fine-tuned.

Available since September

Each of the seven application development aids has been available since last September, when AMDahl

entered the supercomputing field with the introduction of the 1100 and 1200.

As with the coding itself, all compilation, debugging and fine-tuning of the Fortran code is said to take place on an IBM or IBM-compatible scalar mainframe, which is loosely coupled to one of the four AMDahl vector processors.

The finished programs can then be transferred from the scalar front end to the supercomputer, where they can be run without changes, according to the company. Like the existing 1100 and 1200, the 500 and 1400 are entirely air cooled and incorporate 400 and 1,300 gate/chip emitter-coupled logic circuits with 350 picosecond switching times, the source added.

Pricing

The 500, which holds 32M bytes to 128M bytes of main memory, ranges in price from \$4.9 million to \$8.7 million and reportedly will be available for shipment during the fourth quarter.

The 1400, by contrast, expands from a minimum of 64M bytes of central storage to a maximum of 254M bytes and costs \$12.5 million to \$21.8 million. Deliveries of the 1400 will begin in about a year, the company said.

AMDahl is headquartered at 1250 E. Arroyo Ave., Sunnyvale, Calif. 94086.

Manufacturer/ Model	Ray Research, Inc. X-AP	Ray Cray 3	Spacelab, Inc. MSP 1800 Cray 3	STC Systems, Inc. Cyber 200	Notified Reference Corp. 9190 series	AMDahl Corp. 990	AMDahl Corp. 1400
Processing Units Operations per Second	1.4G	1.8G	10M-100M	50M- 800M	50M maximum	133M	1-14G

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Sortland Yard warns against "Raffles-type sort programs."

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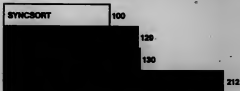
In an extraordinary move, Sortland Yard today warned data processors throughout the world to be on guard against what it termed "gentleman-bandit sort programs."

The warning was issued by one of the Yard's best known figures, Inspector SyncSort, who has sometimes been called "a legend in his own CPU time."

The inspector said, "One of the difficulties in apprehending these chaps is that they look so eminently respectable. They're members of a fine old hardware family. They've been to the right schools. And they invariably carry out their burglaries while wearing a dinner jacket from Seville Row."

EXPERT COMPUTER CRACKERS. "But once the party is underway," the inspector said, "these chaps head straight for the place where the family jewels are kept. They can crack open a computer and make off with a king's ransom in computer resources before you can say 'Hound of the Baskervilles!'"

To indicate "the true cost of this sort of misbehavior," the inspector released the following crime statistics:



DFSORT, Release 7.0

SOMETIMES TAKE HOSTAGES. The inspector noted that these black-sheep programs often "take a dreadful toll" of programmers. "They are often tied up for days on end and forced to perform unnecessary coding, compiling and debugging. And they are heartlessly deprived of the labor-saving features that are taken for granted in most parts of the civilized sorting world."

Among these the inspector listed:

- SORTWRITER
- MULTIPLE OUTPUT
- RECORD EDITING
- FAST FILE COPY
- MAXSORT

TELEPHONE BEST DEFENSE. The inspector urged data processors to call the Yard immediately if they suspect their center is infested by a Raffles-type sort program. "The number is (201) 568-9700. We'll send over one of our highly trained sort detectives to track the culprit down."

Questioned as to what would be done with sort programs caught burglarizing computer centers, the inspector replied, "They will be given a just and speedy trial. If found guilty, they will immediately be transported to Iran!"

NEWS

AT&T boosts computer line with supermicro, supermini

By Tom Ichniowski
CW Staff

LINCROFT, N.J. — AT&T boosted up its mid-range, Unix-based processor line last week with the 3B2/400 high-end supermicrocomputer and the 3B15 low-end supermini-computer.

The 3B2/400 32-bit system is based on Western Electric Co.'s 32100 microprocessor. It is available in four basic models featuring 1M to 4M bytes of main memory and can be configured with a math accelerator coprocessor — a Western Electric 32108 CPU — for floating-point applications. AT&T said the unit has a performance of roughly 1.1 million instructions/sec.

The 3B2/400 supports one or two integrated 30M- or 72M-byte hard disk drives, and by using expansion disk controllers and expansion modules, users can configure a system with up to 720M bytes of disk storage, AT&T said.

An integrated 23M-byte streaming tape drive is included with the 3B2/400 for data backup, and the unit is equipped with up to 46 RS-232C ports and 11 parallel ports, according to AT&T.

Available in October, the 3B2/400 was designed to use the firm's Unix System V Release 2.0 operating system, which is included with the purchase price. AT&T said the system was designed to support from 10 to 25 simultaneous users. However, up to 46 terminals can be physically connected to the system.

A basic 1M-byte configuration costs \$19,950 and a 4M-byte configuration is \$34,960. Similarly config-

ured systems geared for scientific applications cost \$21,550 for a 1M-byte configuration and \$36,550 for a 4M-byte configuration. The optional Math Accelerator Unit costs \$2,200 and will be available in November. A demand paging feature for the Unix operating system costs \$360 and will be available in December, AT&T said.

The 3B15 32-bit supermini-computer can support up to 60 simultaneous users and is based on the Western Electric 32100 microprocessor and the 32106 Math Accelerator Unit.

The 3B15 can accommodate up to 16M bytes of main memory, and up to eight disk drives can be attached to it. Four tape drives can also be used with the 3B15.

AT&T offers two types of tape drives — a single-density, 1,600 bit/in. drive or dual-density, 1,600 bit/in. or 6,25K bit/in. drives. Both can be controlled by either of two AT&T Intelligent Tape Controller cards, the company said.

AT&T's Unix System V Release 2.1 operating system is supported on the 3B15.

A basic 3B15 Model 101, consisting of five I/O slots, two general-purpose slots and four memory slots, costs \$54,500. Two larger models, the 301 and 301, with 15 I/O slots, four general-purpose slots and eight memory card slots each cost \$64,500. The two models differ in the types of disk drives that can be attached. All three models will be available in the third quarter of 1985.

More information can be obtained from AT&T, 1 Spedwell Ave., Morrisstown, N.J. 07960.

IBM mainframe. The software is made up of a library of routines that enable a user to write programs to transfer data between an IBM mainframe and a 3B.

The product can be used in conjunction with the two emulators to select data from applications that support SDLC or BSC protocols.

The Communications Processor provides a gateway between 3BNet, AT&T's Ethernet network, and an IBM host. It reportedly supplies IBM 3274 controller emulation and protocol conversion capability. The device converts asynchronous transmissions into SDLC protocol, AT&T said. The product is available in two models. The Model 1 can attach directly to an IBM mainframe channel and was designed for local use, AT&T said. The Model 2 was designed for remote use and can be used over dial-up telephone lines.

The Communications Processor consists of a disk drive, microprocessor and random-access memory. The product, which will not be available until the first quarter of 1986, was designed to link a number of 3B machines to an IBM mainframe at speeds up to 19.2K bit/sec.

The emulator packages each cost \$700 for a 3B2 version or \$1,500 for a 3B5 model. The 3270 API for the 3B2 costs \$160; the 3B5 version sells for \$250. The communications processor costs \$27,000.

AT&T is located at One Spedwell Ave., Morrisstown, N.J. 07960.

AT&T ties to IBM world key to long-term strategy

By Paul Rosenzweig
CW Staff

The jury is still out on whether AT&T can become a major player in the computer market. However, industry analysts have said AT&T's announcements last week (see story page 1) produced evidence that the communications company can compete with IBM.

Dison Doll, chairman of DSW Group, Inc., an Ann Arbor, Mich., consulting firm, noted, "AT&T is catering to the real world. If it has any chance of surviving in the computer market, the communications company has to recognize the importance of IBM and its pervasiveness in the market. To sell equipment, AT&T has to make it very easy for a user to connect an AT&T system with an IBM product." Jim Renaldi, an analyst at Dataquest, Inc., a San Jose, Calif., market research firm, added, "The communications links were the most important part of the announcement. I think that AT&T had to speed up the timetable for these introductions because IBM managers had demanded that AT&T products work with IBM equipment."

Some analysts saw the links as only a first step toward true integration with IBM systems. "AT&T has supplied 3270 terminal support for [AT&T Unix] applications," stated Kim Myhre, director of communications industry research at International Data Corp. (IDC), a Framingham, Mass., market research firm. "It's an important step. But to succeed, AT&T must add value to its links. It has to offer something beyond terminal emulation, such as peer-to-peer communication for enhancements like IBM's LU6.2."

Peter Lowber, manager of the information systems group at the Yankee Group, a Boston consulting firm, concurred. "The AT&T announcement is no big deal, since it only supplies the lowest level of connectivity," he said. Other firms such as Digital Equipment Corp. and Wang

Laboratories, Inc. are a few steps ahead of AT&T, according to Lowber. "These companies are supplying sophisticated links to those such as [IBM's] Document Content Architecture," he added.

Connectability key

Connectability is becoming a key issue for many companies that use a number of different computer systems. "Not even IBM can connect its systems together," noted Eric Arnum, research analyst at International Resource Development, Inc., a market research firm in Norwalk, Conn.

IBM has begun to address this problem with a series of communications products. "IBM is making a concentrated effort to connect its systems, and AT&T has to keep pace," IDC's Myhre said. "It has to add some such as [IBM's] Distributed Office Support System bridge to the 3B line."

DSW Group's Doll said that most vendors offer the same capabilities that AT&T supplies. "AT&T is addressing connectivity issues with its cabling plan and Information Systems Network," he noted. "The company realizes it has to address problems of higher level protocols. AT&T is close to offering the capabilities that other companies supply. One should realize that these companies are also having problems linking their systems to IBM."

While analysts saw the links as necessary, some doubted AT&T's 3B products could entice IBM customers. "The 3B line cannot stand on its own," Dataquest's Renaldi said. "It has to be sold as a supplement or a complement to another line."

A principal reason for this is that the 3B line was built on outdated technology, Renaldi added. Another problem is the lack of 3B applications software. There are approximately 4,000 packages for the IBM System/36 and only a few hundred for the 3B line, said International Resource Development's Arnum.

AT&T from page 1

and the IBM System/36 as a departmental computer and the 3B5 as a rival to IBM 4300 mainframes in the low-end mainframe market, AT&T said.

The four communications products include the SNA/3270 Emulator+, the BSC/3270 Emulator+, the 3270 Application Program Interface (API) and AT&T Communication Processor.

The SNA/3270 Emulator+ is a software package that runs on the 3B2 or 3B5. It emulates an IBM 3274 cluster controller and supports four to eight 3278 Model 2 terminal or 3287 printer versions, AT&T said. The device works with IBM's Synchronous Data Link Control (SDLC) protocol.

The BSC/3270 Emulator+ is said to supply the same capabilities as the SNA/3270 Emulator except that it supports IBM's Binary Synchronous Communications (BSC) protocol, not SDLC.

Both emulators require an expansion card and work with an RS-232C connection at speeds up to 19.2K bit/sec. An Intelligent Synchronous Controller card works with a 3B2 and an I/O Adapter/Synchronous Data Link Interface file in a 3B5 system expansion slot. When a 3B system is emulating a 3274 controller, a user can run other Unix applications.

The 3270 API provides file transfer facilities between a 3B and an

System V-VM allows IBM users to 'exploit' power of AT&T Unix

LINCROFT, N.J. — AT&T last week took on IBM in the heart of Big Blue's territory with the introduction of an operating system for IBM's 370 architecture mainframes.

AT&T unveiled a version of its Unix System V Release 2 — dubbed System V-VM — that runs as a guest under IBM's VM operating system on IBM mainframes. The AT&T product is similar to IBM's Executive for the IBM 370 (IX/370) System V version that IBM announced in February among its 3090 processor introductions (CW, Feb. 18).

According to an AT&T spokesman, System V-VM allows IBM mainframe users to "share existing hardware resources and provides a cost-efficient way of exploiting the power of Unix." The AT&T mainframe operating system reportedly features enhanced systems and operations facilities

for the mainframe environment.

In addition, the spokesman said, System V-VM provides support for IBM 3270-type terminals, an interface between VM and IBM's MVS and full-duplex communications for the use of Ascl terminals. The product also offers University of California at Berkeley additions, full screen editing, text processing capabilities and AT&T's Document's Workbench software.

System V-VM is currently under controlled release and is scheduled for general availability in October. Yearly license costs will range from \$20,000 to \$25,000, depending on whether source code is supplied. IBM's IX/370 is also slated for October shipments and its price, based on the number of concurrent users, ranges from \$10,000 to \$40,000.

— John Galtieri

Software International moves to link mainframe tools

By John Galtner
CW Staff

ANDOVER, Mass. — Software International Corp. is expected today to announce the first offerings in a series of products that will eventually tie the capabilities of the company's existing line of applications software.

The company, headquartered here, took up the torch of integration from mainframe software brethren Computer Associates International, Inc. and Urecol Corp., both of which faded the flames with recent announcements of the integration of their lines of systems software products [CW, June 10, June 17].

Today's product introductions are said to be the first phase in the release of Software International's Masterpiece series, which will feature the firm's current applications enhanced and restructured to utilize the common query and systems management components of the new product line.

Masterpiece products

Rogle Kaufman, manager of product marketing, said the Masterpiece products include new releases of Software International's general ledger, accounts receivable and payable, fixed assets and manufacturing resource planning packages, a purchase order package, the Masterquery inquiry and ad hoc reporting system and System Manager. All are slated for availability by the end of this year.

The System Manager includes Master Security, On-Line Help and Menu and Screen Navigation modules. System Manager is said to link Masterpiece applications with Masterquery. The modules provide a single login facility and application-specific help text capabilities for moving from screen to screen within an applica-

tion or between applications.

According to Kaufman, the Masterpiece products are the result of a major development effort aimed at creating what Software International is calling an "intelligent architecture." Within that architecture, application-specific code is isolated from common components such as the query and system management tools. Those common facilities allow users to gain access to and utilize information from the applications, he said.

Future phases of Software International's development effort will involve the removal from the applications of code specific to data base management systems and telepro-

cessing monitors. In addition, microcomputer-to-mainframe link and production report writer modules will be added to System Manager.

System Manager tools will be made available with the first Masterpiece application a user purchases, Kaufman said. Other applications can then utilize the components. The first application, general ledger, is slated for a September release.

According to Kaufman, current users will receive upgrades to the Masterpiece series at no cost. In addition to the ability to utilize Masterquery and System Manager, the Masterpiece versions of the applications are said to feature significant functional enhancements.

Masterquery will be available this month for the current general ledger system and will include an interface to the Masterpiece series general ledger. It will be priced at \$30,000; subsequent interfaces to other Masterpiece products will be priced at \$6,000 each.

The Masterpiece products will operate in IBM's OS and DOS environments. Under a special pricing offer, the applications will be priced between \$30,000 and \$60,000 through 1986. Subsequently, prices will be increased to between \$44,000 and \$66,000 per application.

Software International is located at One Tech Drive, Andover, Mass. 01810.

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DOD to install AT&T 3B line

GREENSBORO, N.C. — AT&T Technologies announced last week it has been awarded a contract to provide and install its 3B line of computers at the U.S. Department of Defense.

The contract, which AT&T said could be worth almost \$1 billion, was seen as a major victory by AT&T over a field of computer vendors.

Since its entry into the computer market in March 1984, AT&T's product line has been scorned by analysts, who claim the company entered a highly competitive market with a product lineup that technologically trails those of other vendors.

Under the terms of the contract, AT&T will install and maintain 3B hardware and its Unix System V operating system. "This is a very large procurement, which we worked very hard on for more than a year," said Warren Corgan, vice-president of AT&T's Federal Systems Division, which bid on and will manage the contract. "The customer is a very sophisticated user of computers, and it is very gratifying to be chosen over the other major suppliers."



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NEWS

Proof is in the product: Users guarded on IBM-MCI move

By Bryan Wilkins
CW Washington Bureau

WASHINGTON, D.C. — "I think AT&T is going to have a real contender."

That is how Jerry King, manager of telecommunications for General Electric Co., evaluated last week's announcement of the intended deal which would turn Satellite Business Systems (SBS) over to MCI Communications Corp., while, in return, granting IBM a 16% stake in MCI.

GE is one of many large corporate accounts held by SBS, the satellite communications company

held jointly by IBM and Aetna Insurance Co. Other SBS users reacted last week with surprise and caution, mixed with interest, over the deal. Users said they would reserve judgment on the IBM-MCI strategic alliance until products and services were demonstrated.

"Obviously, IBM is a real viable player now in the telecommunications business as a result of this," said Al Ladwig, manager of telecommunications for J. C. Penney Co., located in New York. Penney uses SBS services mostly for the company's voice communications.

"I've got to be shown that this is good for me," Ladwig added. "AT&T is a big company with a lot of plant in place. This deal won't change my attitude overnight because IBM has a piece of MCI. There is a lot of business out there, and MCI can't go after all of it."

"We'll watch how this thing shakes out," Ladwig said. "If we don't get the support [from SBS], then we'll change."

Ladwig admitted to being surprised at the IBM-MCI alliance. "I suppose I shouldn't be. Whether they will be able to serve our needs remains to be

AT A GLANCE

MCI COMMUNICATIONS CORP.

- Divisions
 - MCI Telecommunications Corp.: Domestic long-distance service
 - MCI International, Inc.: International long-distance, Telex services
 - MCI Digital Information Services Corp.: MCI Mail and data services
 - MCI Airmail, Inc.: Mobile telephone paging services

1984 Revenues — \$1.96 billion
1984 Profits — \$59.2 million
Assets — \$3.69 billion
Shares outstanding — 235.5 million
Customers — 2.5 million



AT A GLANCE

SATELLITE BUSINESS SYSTEMS

(Partnership: IBM 60%, Aetna Life & Casualty Co. 40%)

- Divisions
 - SBS Skyline Services: Long-distance services
 - SBS Network Services: Voice and data networks for large businesses
 - IBM/SBS Joint Marketing: Information and communications systems
 - SBS Real Estate Communications Co.: Shared tenant services

1984 Revenues — \$290 million
1984 Losses — \$100 million
Assets — \$1.1 billion
Customers — 200,000



MCI from page 1

ding, "we take it as a compliment that they think we can do it better than the others. We can now deliver performance for very sophisticated users."

McGowan said one principal market being targeted by MCI and IBM will be the Fortune 500 companies, which, he said, plan to spend an estimated \$1 billion on new telecommunications services in the next few years.

MCI in the last year has invested \$1 billion in expanding its nationwide telecommunications network, installing 10,000 miles of fiber-optic cable and increasing its already almost ubiquitous microwave links — all in a push to attract the large business customer.

Nevertheless, MCI's marketing effort has not met with success in attracting the businesses and corporations that comprise the largest volume and largest revenue portion

of the long-distance business, according to some analysts, because its service was seen as inferior in quality compared to AT&T.

The agreement in principle between the two companies is expected to be finalized in the next month, McGowan said. It also must face Federal Communications Commission review as well as similar scrutiny from the Department of Justice.

Personal revenue period

McGowan said a formal review period permitting public comment on the strategic alliance will be initiated by the Justice Department in accordance with the Hart-Scott-Rodino law, which requires public participation in mergers and business combinations where market share is affected. He predicted that the merger of SBS into MCI will be accomplished within the next three to four months.

In 1984, SBS generated approximately \$400 million in revenue from 200,000 customers, McGowan said.

MCI will fold these customers into the company and take over ownership of three Ku-band satellites now in use — SBS 1, SBS 2 and SBS 3 — as well as 21 switching centers, SBS' headquarters and most of its 2,700 employees in McLean, Va.

IBM Vice-Chairman Paul Rizzo, who accompanied McGowan to the press conference here last week to unveil the alliance, said that IBM and its other partner in SBS, Aetna Life & Casualty Co., were absorbing SBS' \$165 million annual losses. IBM owned 60% and Aetna 40% of the subsidiary into which \$1.3 billion has been sunk. Aetna said it would receive a payment from IBM in the form of MCI stock and cash for a portion of its ownership and would write off a loss in the second quarter.

McGowan predicted that adding SBS' assets to MCI would aid his company and not detract from it, despite an 11-year history of SBS losses. "By acquiring these assets debt free, we can enhance them and enlarge our

own system," he said.

IBM's Rizzo commented, "IBM continues to be very interested in telecommunications, and we have taken a minority stake in the most significant independent company in the telephone industry." Rizzo said IBM decided to unload SBS to MCI because "we determined that [SBS] would have required a very considerable investment over the next few years during a period where there is considerable turmoil in the telecommunications market."

Rizzo said IBM did not intend "to be the deep pockets" to fund MCI's expansion. "Unless the economy of this industry makes sense, it will be difficult to attract dollars from anyone, including IBM," he said.

By having in IBM a partner that is established as the dominant presence in the DP departments of corporations and businesses, MCI will find it easier to attract this important segment of telecommunications business, analysts said.

MCI alliance fortifies IBM arsenal for battle with AT&T

Industry analysts generally felt IBM's intended acquisition of a 16% stake in MCI Communications Corp. would benefit both companies, while AT&T reacted to last week's announcement by calling for an end to government regulation of its operations.

Greg Carlsed, an analyst with Dataquest, Inc., said, "MCI understands communications. IBM gains a foothold in the market where they will ultimately be in direct competition with AT&T. MCI needed the capital to expand its network."

Mary Johnson, a senior analyst with the Yankee Group, said, "IBM is bracing for its battle with AT&T. But it did not know much about communications. Now they can turn to MCI and let them do it."

Johnson predicted a very close working relationship between the two companies. "MCI has a packet-switching data network that IBM may be interested in as it begins to include support for IBM products," she added.

The strategic alliance between the two companies prompted AT&T Communications President Randall Tobias to remark, "IBM has now stacked

out a very big role in the long-distance market. This announcement should put to rest any remaining questions about the strength of competition in the telecommunications business — and whether or not it is here to stay."

Tobias called on the Federal Communications Commission to relax current regulatory barriers that bar AT&T from combining its long-distance service with its computer and office automation product lines, which are presently offered through its AT&T Information Systems subsidiary. That position is now being considered by the FCC.

GTE Telecommunications Corp., whose Sprint Communications Corp. subsidiary is the third largest competitor in the long-distance market, said, "The action that IBM and MCI have [taken] shows the severity of the problems in the long-distance market and the need for changes for the transition to effective competition with AT&T."

William McGowan, MCI president and chief executive officer, said MCI's alliance with IBM will not diminish competition in the long-distance industry but rather enhance it by making MCI better

able to compete with AT&T. He said that the current 10% market share held by carriers other than AT&T was not relevant in determining if competition was enhanced by the IBM-MCI alliance. "IBM would eventually buy a controlling interest in MCI. There's nothing in the plan which says IBM will obtain the 50% interest. It only says they can go to that amount without getting board approval. We initiated the discussions. We wanted [Satellite Business Machines] and a relationship with IBM."

IBM Vice-Chairman Paul Rizzo added, "IBM is not interested in exercising a controlling interest." Nevertheless, IBM last year completed a \$2.5 billion takeover of private branch exchange and switching system manufacturer Rolm Corp. of Santa Clara, Calif., after initially buying a small stake in the company and then gradually increasing its interest until a complete buy-out was agreed to.

McGowan said IBM had not asked for a seat on MCI's board and added, "I don't think it would be any problem if they wanted to."

— Bryan Wilkins

NEWS

seen; I've got to be shown," he said.

Similar sentiments were voiced by Wells Fargo Bank's San Francisco manager of telecommunications, Ron Lee. "The only interest in this is in the financial arrangement. There are no benefits I can see that we can derive from this in the short term. Maybe in the long term, they can offer improved service and improved availability," he said. Lee said Wells Fargo dropped SRS as a telecommunications supplier several years ago.

National fit

Jerry King, GE's telecommunications manager, said he saw the merger of SRS' digital satellite capacity with MCI's terrestrial microwave and fiber-optic network as a natural fit.

"SRS can put its voice customers on the terrestrial network, getting rid of the space delay problems [associated with satellite voice links], and MCI can put its data communications traffic on the satellites. AT&T has a real contender," he said.

Most SRS users contacted were unanimous in predicting that IBM would eventually want to ob-

tain complete control over MCI, which they saw as a "fuzzy, independent" company.

The managers of large corporate telecommunications networks said they preferred having a number of competitors from which to choose for their service and voiced some doubts whether in the long run competition would be served by the IBM-MCI alliance.

Joe Brophy, manager of telecommunications for Travelers Insurance Co. of Hartford, Conn., also a user of SRS, said the IBM-MCI alliance probably won't affect his company immediately.

"Business as usual"

"It will be business as usual, most likely. I don't expect anything to come of it for the first year or so," he said.

For the long term, Brophy said, the alliance will aid both IBM and MCI. "I'd expect to see new products, penetration into data communications by IBM, combining its [private branch exchange] technology contained in Rm," he added.

Travelers' voice needs are currently being sup-

plied by a large investment in a Centrex system as well as heavy reliance on AT&T Communications for long-haul links. MCI is used very little, said Brophy, who added that switching to MCI was not currently in his company's future plans.

Integrating voice and data is one of Travelers' major goals, Brophy said, but "that's really a PBX problem how the architectures will be constructed."

Dick Kaufman, a telecommunications consultant in Rowayton, Conn., said the alliance will make large-scale data file transfers over SRS satellites a viable business if managed by MCI without IBM interference. But Kaufman said that customers of these new sophisticated business services have been left behind, afraid to buy the offerings because they don't know what to do with them once they have them.

"I'm very pessimistic. IBM has failed; AT&T has failed. We need massive customer education to take advantage of all this wonderful stuff. There is very little going on to harness the data capacities of these communication pipes," he said.

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NEWS

EUROPE

Continued from page 1

Each of the six, however, has adopted a strikingly different strategy.

■ **Siemens AG** of West Germany. In 1983, this vast electronics conglomerate was second only to IBM in its number of large-scale systems shipments, according to IDC Europe, but that ranking is expected to be a far-distant second: Siemens shipped 112 units compared with IBM's 700 units. But Siemens AG does not ship any computer systems to the U.S., preferring instead to nurture functionally independent U.S. subsidiaries engaged in telecommunications equipment, semiconductors, factory automation and fiber optics.

■ **Nixdorf Computer AG** of West Germany. Domestically a poor cousin to the older Siemens, this firm — through its Nixdorf Computer Corp. U.S. subsidiary — is the only one of the six major vendors to market a line of general-purpose computer systems in the U.S. and has gained a niche by offering IBM-compatible hardware.

■ **International Computers Ltd. (ICL)** of the U.K. Despite the aid of the British government's nationalistic buying tendencies, ICL suffered financial problems for a number of years and was acquired last year by Standard Telephone and Cable. The firm's ICL, Inc. U.S. subsidiary has lived a stop-and-go existence and is concentrating on vertical-market applications of small business computer systems.

■ **N. V. Philips Gloeilampenfabrieken** of the Netherlands. A multibillion-dollar conglomerate like Siemens, N. V. Philips' claim to fame in the U.S. lies with its majority ownership of North American Philips Corp. and attendant consumer brands such as Magnavox, Norelco and Sylvania. In the U.S. computer arena, Philips owns a semiconductor manufacturer and operates a subsidiary to sell office automation products manufactured by a Canadian subsidiary. It has aggressively entered the emerging market for optical storage products in partnership with Control Data Corp.

■ **Ing. C. Olivetti & Co. of Italy.** Despite the uneven performance of Decotel/Olivetti Corp. in the financial systems and office equipment markets, Olivetti recently announced it is seeking to increase its ownership of Decotel/Olivetti from 46% to 100%. The No. 1 European manufacturer of small-scale systems is indelibly wedded to the U.S. market through an equity interest held by AT&T and a variety of venture capital investments.

■ **Telefonaktiebolaget L. M. Ericsson** of Sweden. This firm is one of the leading telecommunications equipment companies, with revenues of more than \$3 billion. Of the domestic small systems installed base, Ericsson claimed only 3% of the total in 1983, and medium systems were only 8% of Sweden's installed base. In the U.S. it operates Ericsson, Inc. in partnership with Atlantic Richfield Co. and has formed and acquired an impressive stable of U.S. operating units.

The lure of the U.S. market to European vendors is obvious. "It is a big, homogeneous market," noted

See EUROPE page 13

Equity Interests	Siemens Capital Corp. Shareholders for U.S. corporations Siemens Capital Research & Support, Inc. Siemens-Mitsubishi, Inc. (50%) Factory automation and power engineering equipment Siemens Communications, Inc. Telephones and data communications equipment — Datakit, Inc. Data network systems Siemens Components, Inc. Semiconductors and electronic components — Crystal Technology, Inc. Optical and acoustical crystals — Microwave Technology Corp. Microwave semiconductors Siemens Medical Systems, Inc. Medical electronic equipment HMC Graphic Systems, Inc. Progress electronics systems Stoner Corp. (50%) Joint venture with Corning Glass Works Fiber-optic products Advanced Micro Devices, Inc. (20%) Semiconductors	Partnership with R.V. Philips, Dutch and West German governments Development of submicron semiconductors European Computer Industry Research Center Partnership with ICL Ltd. and Groupe Bull Research into artificial intelligence and advanced software
Technology Exchanges	Computer-aided engineering (CAE) cooperative with Datsy Systems Corp.	Signed Unix standardization pact Expert ™ participant OSM mainframes from Fujitsu Ltd. OSM Personal Lightline (CAE) system from Datsy Systems Corp.

Equity Interests	Decotel/Olivetti Corp. (46%) , seeking to acquire 100% Microcomputers, office equipment and banking terminal systems Mitsubishi Computer Corp., Inc. (46%) Retail microcomputer chain Venture capital investments	Acorn Computer Group PLC (49%) UK microcomputer vendor Acquired European operations of Exxon Office Systems OSM mainframes from Hitachi Ltd. Olivetti of Japan Ltd. (50%) Japanese subsidiary part-owned by Toshiba Corp.
Technology Exchanges	OSM microcomputers to AT&T OSM microcomputers to Natsy Corp.	Signed Unix standardization pact Expert ™ participant OSM fault-tolerant systems from Stratus Computer, Inc.

Equity Interests	Mitsubishi Computer Corp. IBM plug-compatible mainframes, office automation equipment, financial systems Mitsubishi Computer Software Co. Software development Aerogram Systems Corp. (16%) Fault-tolerant systems	
Technology Exchanges	Joint development and OSM Aerogram Systems Cooperative agreement with Sparcware Computer, Inc. for operating system software Wide range of software licensing agreements	Signed Unix standardization pact Expert ™ participant

NEWS

Technological lag spurring partnerships

By Peter Bartelt
CW Staff

European vendors may not want to admit publicly that the problem exists, but they are all taking aggressive steps to halt what has been perceived as a serious technological lag.

In his 1984 report to shareholders, W. Decker, chairman of N. V. Philips Gloeilampenfabrieken, said, "There is much talk of a 'technology gap' between Europe and the rest of the world. We are of the opinion that, in our field at least, such a gap does not exist at the present time. There is considerable danger, however, that Europe will indeed fall behind if the available technological knowledge cannot be translated into products required by the market. . . . Accordingly, in the past year we have done everything within our power to help bring about the common and homogeneous market that is so desirable."

Both with government sponsorship and without, European vendors are increasingly banding together with each other and with Japanese and American vendors in an effort to ensure technological progress and to establish viable distribution channels.

Both with government sponsorship and without, European vendors are increasingly banding together with each other and with Japanese and American vendors in an effort to ensure technological progress and to establish viable distribution channels.

"Fighting to fight IBM"

According to Chris Wicks, director of research for IDC Europe, Ltd., the London-based office of International Data Corp. (IDC), the impetus behind technological and marketing alliances is simple. "They are trying to keep away from IBM and trying to fight IBM," he said of the European vendors.

IDC Europe's figures (see story page 1) point out the naked truth. Where IBM has yet to grasp the dominant share of the marketplace — such as it holds in the European mainframe market — it has at least established a trend as the fastest growing supplier in small- and medium-scale systems.

In International Computers Ltd. (ICL) and Siemens AG have turned to Fujitsu Ltd. for mainframe technology, and Ing. C. Olivetti & Co. has turned to Hitachi Ltd. to fill a similar need. While selling micros to AT&T, Olivetti is also reselling AT&T's 333 line of minicomputer products in Europe. N. V. Philips also recently reached an OEM agreement with Harris Corp. to resell Philips' Sopho-Net wide-area network communications products. The communications products are part of a broad Sophomation family of products from micros to large superminicomputers that are designed for a fully integrated office automation environment.

Both N. V. Philips and Siemens are engaging in U.S. semiconductor operations, as well as cooperating in Europe on a venture to develop submicron semiconductor techniques; Philips is taking a leading role, in partnership with Control Data Corp.,

See L&S page 13

Equity Interests	<p>Stromm, Inc. (50%) Joint venture with Atlantic Richfield Co.</p> <ul style="list-style-type: none"> Stromm Communications Telecommunications and QA equipment Stromm Information Systems Integrated information processing equipment Stromm Network Systems Control office switching systems Assensco Video and Cable Co. Wiring and cable products Raytheon Stromm Development Co. (50%) Joint venture with Raytheon, Inc. to develop Stromm telecommunications equipment for U.S. market <p>Psalt, Inc. Office equipment</p> <p>Autostar, Inc. (50%) Retail automation equipment</p> <p>Stromm Programmatic, Inc. Software development</p> <p>Wils, Inc. Components design and manufacturing</p>	<p>Thom Stromm Telecommunications Ltd. (40%) Joint venture with Thom-EM PLC to develop and market digital phone-switching systems</p>
Technology Exchange	<p>IBM digital switching systems to Honeywell</p> <p>IBM printers to Siemens Corp. (Psalt)</p> <p>Cop technology exchange with Advanced Micro Devices, Inc. (Pitt)</p> <p>IBM AT&T data-based office software from Apple, Inc.</p>	<p>Cooperative marketing agreement with Sperry Corp. for European marketing of Stromm Stromm systems</p>

Equity Interests	<p>U.S. Philips Trust (business are the shareholders of N.V. Philips)</p> <p>North American Philips Co. (50%) Consumer products, lighting products, electrical and electronic components</p> <p>Signetics Corp. Semiconductors</p> <p>Philips Information Systems, Inc. Office automation sales subsidiary of Canada-based Philips Information Systems Ltd.; absorbed Philips Peripherals, Inc.</p> <p>Optical Storage International — U.S. (51%) Optical storage products venture with Control Data Corp.</p>	<p>Partnership with Siemens AG, Daimler and West German governments</p> <p>Development of advanced semiconductors</p> <p>Optical Storage International — The Netherlands (51%) Optical storage products venture with Control Data Corp.</p> <p>AT&T and Philips Telecommunications BV (50%) Telephone exchange development venture with AT&T</p> <p>ARM Lithography Systems BV Semiconductor equipment partnership with Advanced Semiconductor Materials International NV</p>
Technology Exchange	<p>IBM Super-Net wide-area network products to Harris Corp.</p>	<p>Signed this standardization pact</p> <p>Equi* participant</p>

Equity Interests	<p>ICL, Inc. Computer systems for various markets</p>	<p>Singapore Computer Industry Research Center</p> <p>Partnership with Siemens AG and Gruppo Bull Research into artificial intelligence and advanced software</p> <p>Cooperative pact with AT&T to develop VLSI logic-chip technology</p>
Technology Exchange	<p>Joint development with Pang Systems Corp. Scientific visualizations</p>	<p>Joint development with Fujitsu Ltd. Very large-scale communications for ICL subsidiaries</p> <p>Signed this standardization pact</p> <p>Equi* participant</p> <p>IBM Offspring software from Computer Concepts, Inc.</p> <p>IBM systems from Pang Systems Corp.</p> <p>IBM data-based equipment from Olivetti Corp.</p>

NEWS

European vendors cool on entrance to U.S. markets

Strategies focus on pioneer areas

By Peter Bartelink
CH Staff

The U.S. market for general-purpose computer systems seems to hold little allure for the Europeans. With one exception, the strategies for gaining U.S. market share are based on thrusts into areas of technology that either are just getting off the ground or have yet to be dominated by U.S. vendors. That exception is Nixdorf Computer AG, which has circumvented Siemens AG's dominance and closeness to the West German government by developing a range of IBM-compatible products.

A 14-year-old study by the U.S. Congress' Office of Technology Assessment (OTA), "International Competitiveness in Electronics," characterized Nixdorf as "perhaps the closest to an entrepreneurial firm in the American style that the European electronics industry has seen."

According to the OTA study, although Siemens has acquired only 20% of the

West German computer market and less than 10% of the European computer market, it has received the greater share of West German government funds for research and development in computer technology. In contrast, the study said, "Nixdorf is an aggressive worldwide competitor in its chosen markets.... The company has accomplished this with little government assistance."



pettiveness by Newton-Evans Research Co., "Siemens AG is West Germany's largest producer of electrical and electronic engineering equipment, and when ranked by sales and numbers of employees, the company ranks as one of the six largest companies in the worldwide electronics and electrical industries."

Siemens' U.S. efforts date back to 1970, and its U.S. employee number about 18,000, Newton-Evans said. A spokesman for Siemens Capital Corp., the holding company for Siemens' U.S. ventures, said the company does not ship CPUs into the U.S., and it has adopted a de-

centralized structure, with various divisions reporting directly back to European headquarters. The Siemens U.S. strategy targets four areas: semiconductors, telecommunications, medical systems and factory automation. When Allen-Bradley

99

Olivetti has an increasing presence in the U.S. and seems anxious to make its presence felt.

Co., the U.S. factory automation firm, was up for sale earlier this year, Siemens reportedly made a \$1.5 billion offer, although Bockwell International Corp. submitted the winning bid.

N. V. Philips Gloeilampenfabrieken, the Dutch conglomerate, is as big as Siemens yet much more diversified. Its U.S. presence is well cemented with 58% control of North American Philips Corp., the lighting and appliance manufacturer that ranks among the 100 largest U.S. corporations. In recent years, N. V. Philips has moved to broaden its U.S. presence with the 1979 acquisition of semiconductor manufacturer Signetics Corp. and its 1984 partnership with Control Data Corp. to develop and market optical mass storage products. Philips also has a thriving Canadian-based office automation company, Philips Information Systems, Ltd., which markets Micom systems. Newton-Evans estimated that the Canadian company generated 20% of Philips' 1983 information-processing-related revenue; that only amounted to \$224 million, however.

In the U.S., N. V. Philips' business systems and peripherals subsidiaries were consolidated into Philips Information Systems, Inc., the U.S. sales arm for both its Canadian-built and European-built products. On June 1, according to N. V. Philips, the company combined its information and communications products groups into the Telecommunication and Data Systems division. "This division intends to strengthen its presence within the U.S. market; however, nothing specific can be said on this at this moment," the spokesman said.

In the Netherlands, N. V. Philips has built a 23% share of the installed base of medium-scale systems, second only to IBM's 24% share, according to IDC Europe, the London-based office of Inter-

national Data Corp. In small systems, its domestic share at the close of 1983 was only 4% of the installed base, the fifth largest share. Unlike International Computer Ltd., Siemens and Iag. C. Olivetti & Co., Philips has no mainframe systems installed, according to the IDC Europe statistics.

Olivetti has an increasing presence in the U.S. and seems anxious to make its presence felt. The Docutel/Olivetti Corp., formed by the 1982 merger of Docutel Corp. and Olivetti, has had an uneven financial performance and has undergone several reorganizations; its two major components are financial automated teller systems and office equipment.

Olivetti has established a venture capital investment arm that reportedly has invested in some 20 start-up electronics firms and is very involved in California's Silicon Valley. This venture re-

portedly has acquired a large stake in the Microgate retail store chain. The big news came last year when it was announced that AT&T would resell Olivetti's M24 micros as the AT&T Personal Computer 6300 and that AT&T had purchased 55% of the Italian firm, with an option to acquire as much as 40%.

Olivetti's U.S. presence was built on the back of its success with typewriters and other office equipment. According to Bill Cronin, vice president of Docutel/Olivetti's office products division, sales are made mainly through dealer and other indirect channels, with the exception of federal government sales and a small direct sales force set up to assist dealers with major accounts.

The writing systems line, a series of typewriters and word processing stations, is distributed through 400 dealers, while the M24 micro is sold through 100 dealers.

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Charles River Data Systems adds 68020-based system

By Tom Nugent
CIS Staff

FRAMINGHAM, Mass. — Charles River Data Systems, Inc. last week joined the ranks of vendors offering supermicrocomputers based on Motorola, Inc.'s 68020 microprocessor with the high-end addition of Universe 32 to its Universe line of Versabus-based systems.

About 2,000 current users of the firm's Motorola 68000-based processors, the Universe 68 line, can field upgrade to the Universe 32 by swapping processor boards. The upgrade, which cost \$8,000 (the vendor is offering a \$1,500 trade-in rebate on older CPU boards), will be available in August. The company said users can double their system performance with the upgrade.

The Universe 32 was designed around the 12-MHz version of the 68020, however, Daniel DeLee, vice-president of marketing, said the company will switch to the 16.7-MHz version of the microproces-

sor when it becomes available this fall.

A basic Universe 32 processor with 1M byte of main memory, an integrated 36M-byte Winchester disk drive, a 1M-byte floppy disk drive and four serial ports cost \$23,000 and will also be available in August.

Supports up to 1.88 bytes disk storage

The Universe 32 can be configured with up to 12M bytes of main memory, a 45M-byte streaming tape unit and either a 36M-, 116M- or 400M-byte Winchester disk drive. The system can support up to 1.88 bytes of disk storage and up to 64 serial ports, the vendor said.

In addition to the 68020, the Universe 32 uses a Motorola 68000 microprocessor as an I/O character processor. The 68000 is dedicated to character-oriented devices such as terminals, printers and serial network ports. A socket is also provided on the Universe 32 processor board for an optional

Motorola 68881 floating-point coprocessor.

The Universe 32 supports UNIX System V, the company's implementation of AT&T's Unix operating system and Unos, Charles River Data Systems' Unix-compatible, real-time operating system kernel. The two operating environments share the same device drivers and object formats. They also support C, Fortran 77, Pascal, RM/Cobol and Basic II programming languages.

Universe 32 users can configure systems into the firm's Universenet local-area network by installing a Versabus network interface module. Universenet conforms with the International Standards Organization's seven-layer Open Systems Interconnect model. General Motors Corp.'s Manufacturing Automation Protocol and Boeing Computer Services Co.'s Technical Office Protocol, the vendor said.

Charles River Data Systems is located at 963 Concord St., Framingham, Mass. 01704.

Net program lets Universe users share Unix capabilities

FRAMINGHAM, Mass. — Charles River Data Systems, Inc. has announced a networking package that permits users of its Universe family of superminis to share AT&T Unix

capabilities in a network that conforms with International Standards Organization (ISO) specifications.

Called Unicuster, the package consists of IEEE 802.3 Ethernet-type

local-area network interconnect hardware and General Motors Corp.'s Manufacturing Automation Protocol (MAP) and Boeing Computer Services Co.'s Technical Office Protocol (TOP) software that has been added to Charles River Data Systems' Universenet local-area network. The package costs \$2,000 per node and is available immediately.

Unicuster consists of two network capabilities: the Distributed Resource Management System (DRMS) and Network Applications Services (NAS).

DRMS permits a user to access files on any Charles River Data Systems unit in the network and exchange data with all systems, regardless of its manufacturer, using the ISO, MAP and TOP protocols. The user accesses the file by entering a Unix path name that accesses remote files in the same way local files are


accessed. This, the vendor said, eliminates the need to add communications codes to applications. Other features of DRMS include remote process execution and virtual terminal connections.

NAS supports three applications: electronic mail, electronic messaging and printer spooling. These applications support request queues, and all requests eventually will execute even if the destination system or intermediate system in the request route is not running. The remote printer spooling feature enables any user on a network to operate any available printer on the network by executing the same command used for a local printer. The printer can queue the messages and print them as time becomes available.

Charles River Data Systems is located at 963 Concord St., Framingham, Mass. 01704.

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
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NCR unveils 32-user supermini

FRAMINGHAM, Mass. — NCR Corp. last week unveiled the most powerful version of its Tower supermini-series to date, the Tower 32, based on Motorola, Inc.'s 68020 microprocessor and capable of supporting up to 32 interactive users.

Claiming two to three times more power than Tower XP, the previous top-of-the-line Tower system, the Tower 32 was designed to use Release 5.2 of AT&T's Unix System V operating system and an optimized C compiler, according to John Walsh, NCR's assistant vice-president of product marketing.

Software programs developed for existing members of the firm's Tower line — the Minitower, Tower 1632 and Tower XP — will run without modification on the Tower 32, the company said.

Available with 1M to 16M bytes of main memory, the Tower 32 can use 44M to 4.6G bytes of disk storage. Floppy disk storage ranges from 1M to 12M bytes, and the unit can accommodate a 4-in. 45M-byte streaming tape drive. Up to three reel-to-reel tape drives can also be attached, NCR said.

Up to 32 CRT terminals can be attached to the Tower 32. The unit can also support a serial printer operating at up to 300 char./sec., a 720 line/min printer and up to four parallel I/O devices connected via Centronics Data Computer Corp.-compatible ports.

The Tower 32, based on a 16.7-MHz 68020 microprocessor, was designed to use Intel Corp.'s Multibus bus architecture and the IEEE Small Computer System Interface to control data flow. The unit includes an I/O subsystem based on Motorola's 68010 microprocessor and a Processor Memory controller that offers 8K bytes of cache memory and a 14M-byte virtual address space, the vendor said.

Available in the fourth quarter, a basic configuration for the Tower 32 consisting of 1M byte of main memory, 46M bytes of disk storage, a 45M-byte cartridge tape drive, I/O subsystem, battery backup and the Business Basic Module of the Unix System V operating system costs \$21,900.

NCR's corporate headquarters is located at 1700 S. Patterson Blvd., Dayton, Ohio 45478.

NEWS

Apple axes direct sales channel

By Kathleen Sullivan
Of West Coast Bureau

SAN FRANCISCO — Apple Computer, Inc. President John Sculley last week described his company's plans to dismantle its national accounts program, thereby abandoning the most widely used method of selling micros to large corporations.

Instead, all Apple sales will be handled through its dealer network. Because the vast majority of personal computer sales to the Fortune 1,000 market, by most accounts, are made through direct sales, the decision calls into question Apple's commitment to selling to the corporate market.

Sculley, who once championed the Macintosh as a business machine for corporate America, took a different tack in last week's speech. "We are a company that builds personal computers for individuals," he said.

In his first public appearance since Apple's recent management shake-up and company consolidation, which resulted in the layoff of 1,200 employees, Sculley sought to reassure the audience since Apple will continue to be a major player in the industry.

New framework of openness

Acknowledging that he would have to do "incredible things" to clear up the confusion over his firm's corporate direction, Sculley promised a new framework of openness and pledged his firm's commitment to "an appreciation for accountability."

Sculley also announced plans to strengthen Apple's relationships with third-party software developers and peripheral manufacturers. He declined to discuss specific peripheral products and said, "The ideas themselves must come from entrepreneurs, as they have in the past."

In his speech, Sculley emphasized Apple's desire to build bridges and make it easier for third-party developers to design products for the Macintosh.

"Apple will make a gradual transition to select industry standard protocols and workstation expandability," he said.

Apple's internal product development efforts will continue. The company will begin shipping an external hard disk drive for Macintosh in October, he said.

Although he did not give a specific date, Sculley said Apple still plans to introduce a file server for its Appletalk network.

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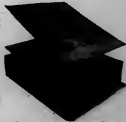
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NEWS

CDC unwraps DBMS, DSS, tools for Cyber 180 systems

MINNEAPOLIS — Control Data Corp. has announced the Information Management/Virtual Environment (IM/VE) family of software, including a data base management system, decision support system (DSS) tools and an applications generator.

The IM/VE packages run on CDC's Cyber 180 systems with the firm's NOS/VE operating system.

Initial offerings in the family include Information Management/Data Manager (IM/DM), a dictionary-driven DBMS; Information Management/Zero Effort User System (IM/Zeus), a fourth-generation-orientation DSS; and Information Management/Information Processing Family (IM/IPF), an applications development facility.

The company said it would announce a data dic-

tionary and intelligent screen management interface at a later date.

Product features

According to a vendor spokesman, the IM/DM DBMS allows nontechnical users to enter and retrieve information, manipulate data, produce reports and issue queries and commands. Technical users are given a set of tools for modifying applications aimed at improving productivity.

IM/Zeus reportedly is intended to give novice users the ability to format, write and edit sophisticated reports and make on-line queries using function keys.

IM/IPF, a package of eight integrated produc-

tivity tools, is said to allow sophisticated users to develop a range of applications and access data on the Cyber 180 system.

Product pricing

IM/VE product pricing is based on CPU size. IM/DM is priced from \$23,520 to \$184,884; IM/Zeus costs from \$5,280 to \$46,200; and IM/IPF costs from \$19,960 to \$89,180.

CDC also offers Micro IPF, said to enable non-technical users to develop stand-alone and distributed applications on microcomputers in the personal and departmental data areas.

CDC can be reached through P.O. Box 9, 8100 34th Ave. S., Minneapolis, Minn. 55417.

Computervision launches CAE, CAD/CAM software

Runs on 3000 series, IBM microcomputer

LAS VEGAS — In a number of announcements, Computervision Corp. last week unveiled software products for computer-aided engineering (CAE) and computer-aided design and manufacturing applications. The packages run on either Computervision 3000 series workstations or the IBM Personal Computer AT.

The CAE products were developed by Mathews-CV, Inc., the Hillsboro, Ore., joint venture formed last year by Computervision and Mathews to provide an automation link with Computervision's CAD/CAM software systems.

Products announced at the Design Automation conference here included the following:

- The Personal Engineer, an IBM Personal Computer AT-based schematic capture package, priced at \$7,000 and scheduled for fourth-quarter availability.

- Two enhancements for the Logic Design/3000 system, which was designed for logical testing of circuitry for printed circuit boards or integrated circuits. The enhancements include Hilo-3, a simulator from General, Inc., priced at \$14,000; and Thruver, a timing verifier used to identify critical paths, priced at \$2,900. Both are scheduled for third-quarter availability.

- Symbolic Layout/3000, for symbolic layout and compaction, priced

at \$25,000 per workstation and scheduled for fourth-quarter availability.

- VLSI Advanced Layout Editor (Vale), for use with Mathews-CV's Full Custom Design/3000 system for integrated circuit design, priced at \$105,000 and scheduled for fourth-quarter availability.

- Electrodata/3000, a printed-circuit board design package derived from Computervision's Cadds 4X software and customized for the company's CDB 3721-E 32-bit workstations. The package is priced at \$15,000 and is scheduled for fourth-quarter availability.

The company also announced the following interfaces, all scheduled for fourth-quarter availability:

- Cadds Connect Interface for

system-to-system interfacing between IBM Personal Computers, Computervision's CDB workstations and Computervision's Cadds resource systems. The interface is priced from \$8,000 to \$30,000.

- Seicards, Rascal-Bedac and Cadds 4X interfaces for format-to-format interfacing between Logic Design/3000 and Seicards, Rascal-Bedac and Computervision's Cadds 4X printed-circuit board systems. All are priced at \$4,900.

- Cvpac, a computer-aided design wire harness software that eliminates the need to design wire and cable connections between system components, priced at \$12,000 per system.

Computervision is located at 15 Crosby Drive, Bedford, Mass. 01730.

Meet to eye human resources

HOT SPRINGS, Ark. — The 17th annual meeting of the National Association for State Information Systems (Nasis) will be held Aug. 5-8 at the Arlington Hotel here.

The conference theme is "Managing the Human Resource in an Information Systems Environment."

Conference topics will include comparable worth and sexual harassment in the workplace, key areas of change for managers, office automation, end-user computing and stress management.

W. Frank Blount, executive vice-

president of networks for AT&T Communications, will deliver the keynote address on "Human Resources Development in a Changing Business Environment: Challenges and Opportunities, 1985-1990."

Cost of the conference is \$180 for government representatives and \$280 for private-sector employees. An additional \$20 fee will be charged for registration after July 15.

More information is available from Nasis, P.O. Box 11910, Lexington, Ky. 40578.

Commercial, OA applications of AI focus of July conference

HYANNIS, Mass. — A three-day seminar on artificial intelligence, software and the commercial applications thereof will be held July 10-12 at Dunfee's Hyannis Hotel here.

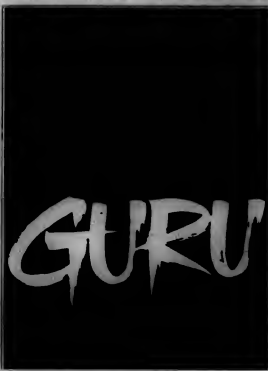
Sponsored by the Technology and Innovation Council and the Information Industry Association, the seminar will include discussions on AI developments in microcomputing, decision tools, the emergence of commercial applications and AI in office automation.

Among the speakers at the conference will be Larry Harris, president

of Artificial Intelligence Corp.; Frederick Hayes-Roth, chief scientist, Teknowledge, Inc.; and Marjorie Rockoff, director of OA for Paine Webber, Inc.

Before June 3, the registration fee is \$345 for Information Industry Association members and \$445 for non-members. After June 3, the fees are \$395 and \$495, respectively.

More information on the conference is available from the Information Industry Association, Suite 400, 315 Pennsylvania Ave. S.E., Washington, D.C. 20003.



NEWS

Hewlett-Packard unwraps enhanced Portable laptop

PALO ALTO, Calif. — Hewlett-Packard Co. today will introduce the Portable Plus computer, an enhanced version of its Portable laptop that offers a 35-line by 80-char. flip-up LCD display and sells for \$2,295.

Designed for "mobile professionals," the new system is built around a Harris Corp. 80C86 Cmos microprocessor, comes with 128K bytes of Cmos random-access memory (RAM), expandable to 806K bytes, measures 13-by 10-by 3-in. and weighs less than 10 lb, according to the vendor. The Portable Plus reportedly will run on batteries for up to two weeks of normal use on a single charge.

The laptop runs under Microsoft Corp.'s MS-DOS 2.11 operating system, and soft-

ware applications are available either in plug-in read-only memory (ROM) cartridges or in 5¼-in. floppy disks for an external disk drive, HP said.

The 192K bytes of built-in ROM-based software includes MS-DOS, the Personal Applications Manager operating environment, HP Link for communicating with the IBM Personal Computer as well as other compatible systems, diagnostics and other utilities.

Optional applications

Optional ROM-based applications include Lotus Development Corp.'s 1-2-3 (\$495), Microsoft's Word (\$375), HP's Memomaker/Time Management (\$195) and HP's PC, 2622 (\$395), which emulates

the HP 3622 and Digital Equipment Corp. VT102 terminals.

Instead of a mechanical disk drive, the Portable Plus reportedly offers an "elec-

The viewing angle is continuously adjustable.

Two expansion drawers can be configured with additional ROM or RAM for a total capacity of more than 3M

ware and software to connect the system with HP Touchscreen microcomputers or IBM Personal Computer-compatible systems. A version for HP micros costs \$175, while a package for IBM-compatible personal computers is priced at \$150.

A 300/1,300 bit/sec. modem, also optional, costs \$495.

The system can link up to a variety of existing HP peripherals, including the battery-powered 3¼-in. HP 9114A disk drive, which handles 710K-byte diskettes, and the Thinkjet printer, HP said.

HP will continue to manufacture the earlier Portable system, which offers a 16-line by 80-char. LCD screen, and the Portable's price will remain unchanged, the company said. No upgrade kit will be offered.

More information is available from HP Inquiries Manager, HP, 1020 N. E. Circle Blvd., Corvallis, Ore. 97330.



HP's Portable Plus battery-powered personal computer

tronic disk" — a battery-powered RAM circuit for nonvolatile storage of data and programs.

The antiglare LCD supports bit-mapped graphics with a resolution of 200 by 480 pixels, according to HP.

bytes, HP said. The BOM drawer accepts industry-standard Cmos 32K-byte or 128K-byte plug-in BOM or 32K-byte erasable programmable BOM.

Optional Portable Desktop Link packages provide hard-

FCC rules Accunet unlawful

WASHINGTON, D.C. — The Federal Communications Commission recently ordered AT&T Communications to withdraw its Accunet Packet Service after determining that the offering discriminated in favor of AT&T Information Systems, which made up 95% of its business.

The FCC determined that the service was priced below its cost and was therefore unlawful. It ordered AT&T Communications to withdraw the current Accunet tariffs within 120 days and imposed an accounting order designed to account separately for the service's costs, revenue, investment and net earnings.

The Accunet Packet Service objected to by the FCC was originally called Basic Packet Switch Service. After it was renamed, AT&T Communications reconfigured the service by bundling its packet switches with the transmission component and changed the pricing of transmission to a usage basis rather than a leased-line basis.

The FCC said that a packet-switch service offered by AT&T Communications to the general public, and to AT&T Information Systems, must unbundle the switching portion from the transmission portion.

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NEWS

U.S. attorneys push to clarify vague '84 DP crime law

By Keith Stiles
CN Washington Bureau

U.S. prosecutors are dissatisfied with the Computer Fraud and Abuse Act of 1984 and have suggested changes in that law as well as pending legislation to make prosecution of computer crimes more successful in court.

At a recent congressional hearing, for example, David Goodwin, assistant U.S. attorney for Washington, D.C., said he is working to obtain a grand jury indictment in a computer crime case but is having difficulty using the 1984 law. He declined to provide details.

Cathy Goodwin, an assistant U.S. attorney in Denver who recently obtained a conviction under the law, said in a recent interview that the law needs some refinements or else it will be open to challenges that it is constitutionally vague.

Through a plea-bargain agree-

ment, Goodwin obtained the conviction of Philip Gonzales Padriale, a Los Angeles man who was charged with trespassing in U.S. government computers in Colorado (CW, June 24).

Goodwin said she is concerned with a provision in the law that defines criminal trespass as conduct that affects the operation of the government computer, because the term "affect" is not defined and is apparently unnecessary. She noted that Padriale's defense attorney filed a motion to dismiss the case on grounds that the law's language is vague.

Robert Boones, Padriale's attorney, confirmed, "We wanted to challenge the constitutionality of the law," arguing it is too broadly drawn and "subject to gross misinterpretation."

He said it is not clear what affecting a government computer means. If it covers the act of entering an access code without authorization, Boones said, "It's like being charged with tapping on a door without ever going behind it."

Because the case was settled by plea bargaining, the defense motion was moot and the language in the 1984 law was not tested.

Provisions referring to unauthorized use of a government computer and trespassing in credit bureaus to obtain information also need to be clarified, Goodwin said.

Goodwin said the law, as a deterrent to hackers, should expressly provide that the perpetrator forfeit his computer equipment, a move also supported by the U.S. Department of Justice. Under the terms of the plea bargain reached in the Denver case, according to Goodwin, Padriale had to forfeit his equipment.

Prosecutors and computer crime specialists also are studying legislation pending in the U.S. House Subcommittee on Crime, particularly a bill (H.R. 1001) that would prohibit

trespassing in private sector computers and permit federal attorneys to prosecute cases involving crimes in which more than \$5,000 a year was gained.

Goodwin and other computer crime specialists strongly opposed the \$5,000 threshold. "From a prosecutor's point of view, that is going to eliminate so many cases," Goodwin said. "You can't put a dollar value on gaining information."

Federal jurisdiction should be triggered when the trespass crosses state borders, such as in the wire-fraud statute, she said.

The \$5,000 threshold was included in the bill, sponsored by Rep. William J. Hughes (D-N.J.), because that

is the way the House Judiciary Committee traditionally has defined federal jurisdiction, leaving lower crimes to state authorities, according to a congressional source.

John T. Vanadia, who follows legislation for the Electronic Data Processing Auditors Association (EDPAA), also opposed the \$5,000 threshold. "The problem is that it's hard to put a value on the theft of computer services or information," Vanadia and Jim Fleming, co-chairman of the international government relations committee at EDPAA, said these issues were discussed by Goodwin and others at the recent EDPAA International Conference in Salt Lake City.

After the conference, the EDPAA officials vowed to sponsor an advisory group composed of EDP auditors, attorneys and legislators to discuss the technical aspects of computer crime.

Goodwin predicted that prosecutors will handle an increasing number of computer crimes, including bank fraud and counterfeit cases, and will need to form partnerships with groups such as the EDPAA to better understand computer crimes.

"The computer in the white-collar crime milieu of the 1980s and '90s," she said, "We're just going to have lots of cases in the federal system involving computers, and we need a really good statute for it."

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"We wanted to
challenge the
constitutionality of
the law."

Robert Boones
defense attorney

INTEGRATION
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X PLANNED I I T
P A F PATHWAYS
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NEWS

Bulletin boards target of crime legislation?

Computer crime experts and prosecutors interviewed recently agreed that future computer crime legislation should address the use of electronic bulletin boards in computer crimes and should modernize courtroom evidence rules.

Cathy Goodwin, assistant U.S. attorney in Denver, said hackers frequently get access codes for trespassing in computer systems and networks from electronic bulletin boards. "To me, it's akin to having a billboard by the street saying: 'Here is the combination to the Colorado National Bank vault. If anyone wants to use it,'" she said.

Richard Cashion, chairman of the Data Processing Management Association's computer crime committee and assistant DP director for Tennessee Technological University in Cookeville, Tenn., agreed. He said he is drafting a model computer crime bill that would penalize electronic bulletin boards for aiding and abetting in a crime or solicitation of a computer crime.

The failure to address this issue is a big deficiency in pending computer crime legislation, added John T. Vandeia of the EDP Auditors Association.

Goodwin, Cashion and Vandeia also said that the courtroom rules of evidence should be revised so that computer-generated business records will be admissible in court. Legal experts say computer printouts are not automatically accepted in court [CW, May 20]. Under his draft legislation, Cashion said, computer reports would be admissible if the report is used in the normal operations of the business or organization; it can be verified as accurate and complete; and it can be put in the form of paper or micrographics for the convenience of the court.

The experts said this reform is especially important in computer crime cases because the system's activity log is crucial to the prosecution. "Without that [log]," Goodwin said, "you have almost no way of proving what was done to the system, other than witnesses."

—Elisabeth Swartz

German survey ranks CDC tops

DELRAN, N.J. — Control Data Corp. ranks first in customer satisfaction among German computer users, according to a recent survey.

With values ranging from 1 to 4, the company received a 4 in the areas of engineering support and technical training for all of its computer system models, according to the survey, which was conducted jointly by *Computerwoche* newspaper — a *Computerworld* sister publication — and Datapro Research Corp. The company received an overall rating of 3.75, with the Siemens AG Model 7800 coming in second overall with a 3.53 rating, according to the study.

The next five overall rankings are as follows:

- BASF (Series 7) — 3.30.
- Burroughs Corp. (all models) — 3.50.
- IBM (Series 4331) — 2.94.
- Siemens AG (Series 7500) — 2.91.
- Honeywell, Inc. (DPS 7 and 8) — 2.88.

Five hundred survey participants evaluated leading computer companies in the areas of computer systems, peripherals, customer engineering support, software and technical training.

Additional information is available from Datapro, which is located at 1805 Underwood Blvd., Delran, N.J. 08078.

Architectures topic of meets

SAN JOSE, Calif. — Communications Solutions, Inc. (CSI) has announced that a seminar titled "IBM's Advanced Communication Architecture" will be held at two locations this summer.

According to CSI, the two-day seminar will examine office communication architectures, including IBM's Systems Network Architecture (SNA) Distribution Services, Advanced Program-to-Program Communications, Document Interchange Architecture and Document Content Architecture.

The seminar will discuss how these products are related to IBM's SNA and how IBM's latest SNA enhancements accommodate IBM's Logical Unit 6.3 and Physical Unit 2.1 capabilities.

The seminar will detail the implementation of IBM's architectures in such products as the IBM 5520 Administrative System and its host-based Distributed Office Support System.

The seminars are scheduled for July 15-16 in Washington, D.C., and Aug. 5-6 in New York. The enrollment fee is \$400 per person.

More information on registration is available from CSI at 992 S. Saratoga-Sunnyvale Road, San Jose, Calif. 95128.

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NEWS



**INTERNATIONAL
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AUSTRALIA

AVAILON — To help reduce manual labor costs, the Australian Government Aircraft Factory (GAF) has installed a National Advanced Systems Corp. (NAS) 6025 mainframe to perform backup and testing. The 16M-byte NAS system contains 60 bytes of disk storage and will run parallel with an IBM 4341 Model 11, according to Bruce Macneil-Brown, GAF data processing manager.

QUEENSLAND — Australia's first

open-access electronic funds transfer (EFT) switch has been launched here by Data, Inc., a major Australian software house. The switch will be open to card-issuing companies and will be linked to EFT switches in other Australian states. The program has been endorsed by the Queensland state government and by 11 of the largest banks here, sources said.

CANBERRA — The government's legal aid system, produced entirely with Information Builders, Inc.'s fourth-generation language, Focus, is undergoing major hardware upgrades due to system inadequacies. According to sources here, the system so overtaxed the agency's IBM 4331 mainframes that upgrades have been ordered from National Advanced Systems Corp.'s 6630 series and IBM 4341 systems.

FRANCE

PARIS — While Sperry Corp. in the U.S. balked at merger talks with Burroughs Corp., Sperry France underwent a shake-up. The president of the French subsidiary was let go, apparently as a result of the firm's recent financial difficulties.

PARIS — Groupe Bull has unveiled a financial version of its workstation based on Convergent Technology, Inc.'s products. The Groupe Bull Quasar 400 F is intended for banks and insurance applications.

HONG KONG

HONG KONG — A three-pronged plan to combat software piracy has

been launched here. The Anti-Software Piracy Association (Aspa), a coalition of Asian distributors and major personal computer software firms, has been formed to decrease piracy by changing public attitudes toward it. According to Aspa co-founder Joe Rich, this will be accomplished by publicizing the success users experience with legitimate programs and by launching marketing campaigns throughout the region emphasizing the technological and training support that comes with legal software. The group has also allocated a \$100,000 fund for taking pirate dealers to court.

HUNGARY

BUDAPEST — Despite a late start, computerization is thriving here, according to Zoltan Naray, director of Hungary's Institute for Coordination of Computer Technology. Naray said the Hungarian government is firmly committed to educating the population here and has launched a program to integrate computers in most schools and universities. Also, the government has sponsored a television program that features instruction in basic programming. The TV program has resulted in the formation of users groups that enable viewers to test their lessons and exchange ideas.

WEST GERMANY

HAMBURG — Members of the European Computer Leasing and Trading Association (Eclat) are up in arms against IBM's leasing division, IBM Credit Corp. Eclat plans to file a complaint against IBM Credit Corp. for violating competitive leasing practices. According to Eclat spokesman Horst Grubike, the problem lies in IBM's attracting users with low prices initially and later increasing the price when a system needs upgrading. Also contributing to Eclat's outrage is a recent statement by IBM GmbH general manager, Bernhard Dorn, who reportedly threatened to cut off leasing representatives if they worked with any other leasing company besides IBM Credit.

MUNICH — Why are women less likely to choose high-tech careers? The Federal Ministry for Education and Science here recently conducted a survey on this question and discovered that women tended to avoid high technology because they are less interested in computers and are not as comfortable around them as their male counterparts. In the study, women revealed that after some exposure to computers, their initial reluctance faded. After this occurred, women were found to be just as adept in dealing with the computers as their male colleagues.

BOBLINGEN — Hewlett-Packard GmbH has boosted revenues by 30% during the first half of this business year, an HP GmbH spokesman said. Meanwhile, the U.S. parent company experienced a more modest revenue growth of 16%. Last year HP GmbH experienced a 42% increase in revenue, to \$706 million, as well as a 35% increase in net profit after taxes, to \$45 million. During that period HP GmbH increased its staff by 21% and now employs 4,167 workers in West Germany, the spokesman said.

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NEWS



CALENDAR

WEEK OF JULY 28

JULY 28-AUG. 1, OTTAWA — The Urban and Regional Information Systems Association's (URISA) 23rd Annual Conference. Contact: Urban Secretariat, Suite 300, 1540 Old Chain Bridge Road, McLean, Va. 22101.

JULY 29-30, ST. LOUIS — Southwestern Bell. Contact: Telestrategies, Inc., P.O. Box 811, McLean, Va. 22101.

JULY 29-30, NEW YORK — Integrating Video and Data in the Private Branch Exchange. Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

JULY 29-30, BOSTON — CIBC/VS Performance and Tuning. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Aug. 5-6 in Atlanta.

JULY 29-31, BOSTON — Standard Network Protocols International and National Packet-Switching Networks. Contact: Data-Tech Institute, P.O. Box 2429, Lakeview Plaza, Clifton, N.J. 07016.

JULY 29-AUG. 1, PORT LEE, N.J. — CIBC/VS MBO/BC. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

JULY 29-AUG. 1, CHICAGO — CIBC/VS Application Design. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held July 29-Aug. 1 in Los Angeles.

JULY 29-AUG. 1, NEW YORK — IBM/DB (DB/1) Application Programming. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

JULY 29-AUG. 2, ATLANTA — CIBC/VS Internals. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held July 29-Aug. 2 in Denver and Aug. 5-12 in New York.

JULY 29-AUG. 2, PORT LEE, N.J. — CIBC/VS Application Programming — Command Level. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held July 29-Aug. 2 in Los Angeles and Washington, D.C.

JULY 29-AUG. 2, PARLIPPANY, N.J. — CIBC Command Level. Contact: Chubb Institute, P.O. Box 342, 8 Sylvan Way, Parsippany, N.J. 07054.

JULY 30-AUG. 1, — SAS Institute. Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

JULY 30-AUG. 1, CARY, N.C. — SAS Programming for New Computer Users. Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511. Also being held Aug. 12-13 in Toronto; Aug. 19-20 in Portland, Ore.; Aug. 22-23 in Calgary, Alta.; and Sept. 9-10 in Atlanta.

JULY 31-AUG. 1, BOSTON — Recovery/Restart. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

JULY 31-AUG. 2, BOSTON —

The IBM Personal Computer. Contact: Data-Tech Institute, P.O. Box 3429, Lakeview Plaza, Clifton, N.J. 07016. Also being held Aug. 5-7 in Washington, D.C.; Aug. 7-9 in Los Angeles; Aug. 12-14 in Seattle; Aug. 31-23 in Chicago; and Aug. 26-28 in New York.

JULY 31-AUG. 2, BOSTON — Data Analysis and Logical Design Workshop. Contact: Elise Sabatini, Leamouth & Burdett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77062.

AUGUST 1-3, TORONTO — Networking the IBM Personal Computer. Contact: Center for Advanced Professional Education, Suite 110, 1830 E. Garry St., Santa Ana, Calif. 92706. Also being held Aug. 15-16 in San Jose, Calif.; Aug. 20-21 in Chicago; Aug. 22-23 in Houston; Aug. 25-27 in Arlington, Va.; and Aug. 29-30 in

Hanover Heights, N.J.

WEEK OF AUGUST 4

AUGUST 4-6, DALLAS — Systems Development Analysis Phase. Contact: Arthur Young & Co., Education Center, 1960 Roland Clarke Place, Suite 500, Dallas, Texas 75201.

AUGUST 5-8, MINNEAPOLIS — Usha/Zenith. Contact: Center for Advanced Professional Education, Suite 110, 1830 E. Garry St., Santa Ana, Calif. 92706. Also being held Aug. 7-9 in Columbus, Ohio; Aug. 19-20 in Hanover Heights, N.J.; Aug. 21-22 in Hartford, Conn.; Aug. 26-27 in St. Louis; and Aug. 28-29 in Philadelphia.

AUGUST 5-7, PARLIPPANY, N.J. — TBO/BSF. Contact: Chubb Institute, P.O. Box 342, 8 Sylvan

Way, Parsippany, N.J. 07054.

AUGUST 5-7, JACKSON HOLE, WYO. — KDF Audit Managers Bootcamp. Contact: Both Evans, MBS Training Institute, Inc., 4 Brewster Road, Framingham, Mass. 01701.

AUGUST 5-7, BOSTON — 1985 American Society of Mechanical Engineers (ASME) International Conference in Engineering Conference and Exhibition. Contact: ASME, 345 E. 47th St., New York, N.Y. 10017.

AUGUST 5-7, WHITE PLAINS, N.Y. — The IBM Personal Computer. Contact: Center for Advanced Professional Education, Suite 110, 1830 E. Garry St., Santa Ana, Calif. 92706. Also being held Aug. 7-9 in Detroit and Las Vegas; Aug. 12-14 in Milwaukee; Aug. 14-16 in Baltimore and Seattle; Aug. 19-21 in Boston, Rouge, La., and St. Louis; Aug. 26-28 in Cherry Hill, N.J., and San Diego.

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For starters, it forms characters precisely with 300 x 300 dot resolution. Characters that are not only far cleaner than your dot matrix printer, but even better than your letter quality printer. You may actually have trouble telling the difference between text that's been printed on the LN03 and text that's been

To give your documents a professional appearance, the LN03 lets you pick and choose from a virtually unlimited variety of typefaces, sizes and styles. And they've all been developed especially for the LN03 by Compugraphic Corporation, the world's recognized authority on computer-generated typefaces.

Two resident typefaces give you no fewer than 16 different sizes, styles and pitches, while optional ROM cartridges let you add just about any face or font you might consider. Including your own custom designed faces. You can even down-load your own character set or custom

designed graphics fonts to print your logo, letterhead or forms. If you like, the LN03 can print sideways, down the length of the paper as well as across, to accommodate spreadsheets, compiler listings, graph captions or other special effects.

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VIEWPOINT

Realizing or rationalizing a career move



TIME DATA CENTER
John P. Murray

Sooner or later, a change in environment is not only in our best interests but also in the best interests of our organizations. When that time comes, we do a disservice to ourselves and to the organization if we stay.

Some people may never encounter such a circumstance. Others do but ignore it and find themselves unable to leave the organization. This is a pity. Still, others accept that they need to change and move on to the next situation.

I am not talking about the malcontents or prima donnas of our profession or those people who are prone to move every year for a few additional dollars. We all know those people — the ones who have four to six different jobs in five years. I am talking about those employees who have done well, who have made solid contributions, but who know that the time to move on has arrived.

It is usually a combination of factors, rather than a single issue, that encourages the move. Even though it may be clear that leaving is the appropriate course, it is not always easy. Fear of the unknown is always a factor. Complacency or simple inertia are also factors. The accumulation of

various "golden handcuffs" can also impede the decision to go. Such considerations should not be allowed to obscure realization that the time to move on has arrived.

The reevaluation of staying, of waiting, is based upon the hope that someone up the line will retire or move on, producing an opportunity for advancement. This is usually more of a wish than

the move, reason should always prevail over emotion.

Every day brings its portion of irritation. We all have to deal with dissatisfied clients, unhappy managers and critics of one type or another. All that simply goes with the territory. Those situations will be waiting for us wherever we go. Although these day-to-day situations can be distracting and sometimes frustrating, they certainly should not be allowed to cloud reason or long-range thinking about what we want to do with our lives.

The factors that indicate that it is time to move will differ for everyone. Individual needs and personalities have a great deal to do with the decision, but there are general guidelines that can be used to begin the process of objectively thinking the issue through.

Reasons to stay

With a job that offers challenge, where your supervisors understand, appreciate and support your efforts, you have reasons to remain. When you know you have given it your best, you have reasons to remain.

Conversely, it is time to go if your talents are not being used, if your contribution is not appreciated or, worse yet, if you suffer from persistent boredom.

In the information processing environment, people either grow or fall behind. If you are falling behind and do nothing about it, you have no one to blame but yourself.

It may be that job opportunities are too plentiful. It may be that some of us are too willing to move on too quickly. The opportunity to do something more exciting, more challenging and more rewarding, can make not moving a career mistake.

In assessing the move, reason should always prevail over emotion. It is time to go if your talents are not being used, if your contribution is not appreciated or, worse yet, if you suffer from persistent boredom.

a reality. It does happen, after years of waiting, that the job opens up and is given to someone outside the organization.

The appropriate time to leave should be based on sound reason and careful assessment of the circumstances associated with the decision. It should not be a reaction to some emotional issue or crisis which, upon calm reflection, will be viewed as a momentary issue or an aberration.

That does not mean that some specific incident may not be the final straw. Such an incident may be the catalyst that will finalize the decision but should not be the overriding factor. In assessing

Heading his own advice, Murray has moved on. He is now director of management and information services for American Breeders Service, a DuPont, Inc., division of W. R. Grace & Co. He is also the author of *Management Information Systems as a Corporate Resource*.

Tracking T&M costs: Too much of a good thing



MANAGEMENT MATRIX
Hester F. Curran

A friend recently moved to a new job in a custom DP house. I asked the obvious question, "How do you like it so far?"

"The work is interesting, but the environment's a problem. For example, there's the copying machine just outside my office. It's not the noise from the machine [that bothers me], it's the noise from the people using it. They have this code gadget on it — you have to punch in your personal ID and a job control number to get copies."

"Twelve digits, and a different code for each project. So all day long it's 'beep ... beep ... beep. Arrgh!' Then people come into my office and waste my time complaining about the system before they cool off, give up and go away."

Estimating costs

Ah, technology. It's wonderful. Somewhere, still alive no doubt, is the person who invented that particular electronic thumbcrew. The alleged idea behind it is to track costs. But the real cause of these extreme

measures is inefficiency.

It starts innocently enough. Estimating time and materials (T&M) is the obvious way to determine the cost of a project. But at some point along the way, somebody wants a firm accounting of how much money was actually spent on the project in terms of T&M.

Suddenly, an experienced manager's educated guesses, spot checks and estimates aren't good enough anymore. Justified figures and item-

forms — that's roughly 10% of the available time — and costs were billed to the clients as "administrative expenses."

Sure, you can justify every penny this way, but what happened to common sense? This method is too much of a good thing.

How did that company get into such a situation? How did all this get started? It sounds harsh, but the odds are that the end user probably demanded those itemized lists be-

cause the hour. For example, surveys, consultations and occasional training courses are all situations where the value of the product sold is clearly proportional to the time spent. But in many cases, end users don't buy time; they buy a product, a finished system, a modification, a report or analysis. In this case, the value of the product is not proportional to the time spent. Only the costs are.

Internal cost controls

DP is labor-intensive. The raw material is time. It's elusive stuff and measures like T&M are necessary internal cost controls. But selling a system in terms of time alone is equivalent to selling a car in kit form by the pound.

It's this attitude that emphasizes cost-justification of the parts at the expense of the whole product. It leads to high overhead and \$650 ashtrays.

Cars and systems have this in common: It doesn't matter how you slice up the costs, the products aren't worth a thing until they run. Seeing a system as a product changes the focus from how much time is spent on it to how well that time was spent. Rather than having individual employees feeling accountable for every minute of their time, teams are challenged to meet a deadline and create a product that works. The emphasis changes to high quality and accuracy. And that is something of which you cannot have too much.

DP is labor-intensive. The raw material is time. But selling a system in terms of time alone is equivalent to selling a car in kit form by the pound. It's this attitude that emphasizes cost-justification of the parts at the expense of the whole product. It leads to high overhead and \$650 ashtrays.

ized lists for everything become the rule. Demands like this cause management to get obsessed with billing everything to some kind of control number other than "general overhead."

Soon, everybody is running around tracking time by the minute and counting photocopies. In the above case, the control number was used three to four hours per week just to fill out the required tracking

cause too many projects came in past their deadlines and over their budgets, and by then there was no other supplier left.

Had there been a reliable product at a fair price, the demands probably would not have been made; instead, two organizations got enmeshed in picking endless nits, and the whole external billing practice moved over to T&M.

Sometimes it makes sense to bill by

Curran is a senior associate with Nicholas Delfino Associates in Bryn Mawr, Pa.

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COMPUTER ASSOCIATES



SOFTWARE & SERVICES

IBM enhances QMF, tools

BYE BROOK, N.Y. — In addition to the plethora of software IBM recently introduced that merges its System/36 with its Office Systems network (CW, June 24), Big Blue announced a variety of other software products, including Release 2 of its Query Management Facility (QMF) for the DB2 data base management system under MVS.

QMF, which also operates with IBM's SQL/Data System data in VM/SP environments, reportedly features report-writing enhancements, batch invocation of QMF procedures and improvements in error-handling capabilities. QMF Release 2, available now, has a one-time charge of \$6,400 or a monthly charge of \$1,070.

IBM also announced Release 2 of Network Services, which supports the attachment of a customer's Systems Network Architecture (SNA) network with IBM's Information Network's remote computer services and other attached networks. Release 2 allows users to interconnect with one or more existing customer networks as well as with the Information Network's remote computing facilities. The service includes multiple parallel links and alternate paths. Applications in attached networks can communicate with applications in other attached networks or in Information Network host processors. Release 2 will be available at the end of the month, and pricing will be based on usage.

IBM also announced the following:

• **DFPort Release 7.1** for sorting fixed-length records in MVS/XA environments. The release also supports OS/VS1 and MVS/370 environments and includes enhanced capabilities for processing multi-volume Sort Out data sets during a Block Set sort or merge function. The product also allows users to preserve the original order of collating records during a Block Set merge. The product includes link-editing capabilities of user exit routines. The monthly license charge is \$247.

• **Enhancements to the System/36 Interactive Data Base Utilities.** Release 7 includes predefined joined logical files that are supported by the software's Query functions. A predefined join logical file will appear to the Query user as a single-record format in a file, a spokesman said. The product also allows Data File Utility (DFU) users to display, add, delete or change records without exiting an application. Users may also enter the verify mode from any other DFU mode. The product will be available in September at a one-time charge of \$3,000 or a \$250 monthly charge.

See IBM page 37

Will hardware chart course for data base management?



SOFTWARE
John Gaffney
CW Editor at Large

Whether thou goest DBMS? Does the future of data base management lie in hardware or in software? The vendors (currently two) of data base machines — a blend of relational DBMS software and specialized hardware — are betting that the future of data management lies in hardware. But it isn't clear that users agree with them, at least not yet.

It seems certain that future generations of hardware will be better equipped to handle data management functions. Hardware's evolution may involve anything from the microcoding of key DBMS processes to the development of a data base machine architecture that is radically different from current data base machine designs.

For today, the path to success for data base machines is strewn with provision. Data base machine technol-

ogy will be embraced provided the following:

■ Users want to move to a relational DBMS and are willing to invest the effort necessary to migrate existing production — not just ad hoc or information center-type — applications to such a system.

■ Users in mainstream commercial shops are facing the storage constraints data base machines are intended to relieve. The data base machine vendors admit their current users have application-specific needs, such as compiling and manipulating massive amounts of seismic data. But they point to the fact that users are now spending more for storage systems than they are for computing power.

■ Users are convinced that specialized data base hardware is the answer to the performance problems associated with relational DBMS technology.

■ Users are looking to tie together heterogeneous processors through a central data base machine — a capability data base machine vendors

See IBM page 38

■ To reach projections of \$50 billion in revenue by 1990, the software industry will offer more services, major vendors agree/34

■ IBM unveiled software that allows its mainframes to act as videotex hosts and a product that enables the IBM Personal Computer to generate videotex graphics/38

INSIDE

Systems
Software/38

International Data Corp. (IDC), the Framingham, Mass.-based market research firm, predicts that the fastest growing segment of the software and services industry for the remainder of this decade will be microcomputer software. That market is expected to grow at a compound annual rate of more than 50% until at least 1992. In contrast, IDC said, the remote computing services market is expected to decrease at a compound annual rate of 5% for the same period, due in large measure to "plummeting hardware costs."

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FOR MVS and MVS/XA USERS

SOFTWARE & SERVICES

Software gaining momentum in DP battle of the budget

By Randall Litchfield
Special to CWS

If the computer industry had a junior partner, it was traditionally software. From the perspectives of both revenue and status, software took a backseat to the might of mainframe, the glamour of minis and the sheer sex appeal of microcomputers.

By all accounts, that is quickly changing. A decade ago, 61 out of every \$10 spent on data processing went to software. The split is now 50-50 and is predicted to swing wildly in software's favor — to a ratio of about 4-1 — by 1990. By then, software in North America is expected to

be a \$60 billion industry.

To a much greater degree than hardware, software is revolutionizing the concept of the corporation itself. In a recent James Martin seminar, the reputed wizard of information processing claimed that developments in software are nothing less than a management revolution in the making that is best on flattening the corporate pyramid.

These issues were the setting for the latest Computer World Round Table discussion between senior managers of 11 prominent software companies. Since the companies represented ranged from large main-

frame-oriented multinationals such as Management Science America, Inc. (MSA) to smaller micro-based companies such as Basic Software Group of Vancouver, B.C., a wide spectrum of viewpoints was presented. But basic to every argument was the dire need to move swiftly in an industry that is absolutely merciless to stragglers.

One thing the participants agreed on was that software companies are starting to look like service bureaus. Mike Walczak, general manager at MSA Canada Ltd., said, "In the old days, software was a simple 64K bytes that the user could load. But with 70% to 80% of our time being spent on customer hand-holding and education, we are quickly moving

from a software industry to a service industry."

Much of the hand-holding stems from the fact that software companies are developing specialties other than traditional MSB shopping grounds. There have been several inroads, including such end-user-oriented software as fourth-generation languages and decision support systems.

Wanted to carry software into '85

Viewed as the vehicle that will carry software into the 1990s, fourth-generation languages are expected to move into fairly broad use by the end of the decade. Michael Foster, president of Cognos, said that 12% to 14% of IBM installations have fourth-generation language products today and most will be using them by the end of the decade.

Even defining a fourth-generation language in an industry as lacking in definition as the software industry has been is a problem. "The only consistent definition of [a fourth-generation language] seems to be that it isn't Cobol, or that it improves user productivity in the eyes of the vendor," said Harvey Gordon, vice-president of marketing for Mathematics Products Group Canada Ltd.

Whether fourth-generation languages could actually replace Cobol, however, is as hotly debated among vendors as it is among MSB professionals. Avary Bardett, director of operations for SystemsHouse Ltd., saw them only as supplements to Cobol, adding that there are simply some things that can't be done with fourth-generation languages.

Walczak, on the other hand, made the blunt statement that there is probably some genius program developer in a garage banging the last nail into Cobol's coffin.

The micro has had perhaps the greatest impact on end-user computing and in erasing the political struggle going on within many MSB departments. "We've been conditioned to address the MSB guy, but since the [personal computer] has entered the workplace, we are now making inroads into other departments," said Larry Lloyd, general manager at Infobuild, Inc.

Not so many years ago, software vendors wouldn't dare approach the end user for fear of MSB wrath. But with predictions that as many as two million people will be using decision support tools by next year, selling to the end user is practically unavoidable.

"Our approach is that when we know that we are going to sell a major piece of software, a committee is formed of MSB and end users," said Conashare, Inc.'s president, Derek Price. "You can't afford to collect a lot of 'no's' in the selling cycle, so you have to sell all the levels making sure that the package satisfies all the needs."

The other factor is that MSB often doesn't have the signing authority for some of the larger software pur-

See CWS7 page 38

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Litchfield is the editor of Computer World Canada, a sister publication of Computerworld based in Mississauga, Ontario.

LASER WARS



SOFTWARE & SERVICES

SHIFT (from page 34)

chases that can range to \$500,000 or more. At Sandy McInair, vice-president of marketing for Minicom Data Corp., said, "We find that the best decisions come from the bottom up, where the president waits for his people to say what the best route is."

But if the president is to make an intelligent final decision, it increasingly involves getting his hands dirty in something top management has so far avoided like the plague. "Senior executives are getting left behind by computers and need to get their own [personal computers] in order to understand what the revolution is all about," Lloyd said.

Another issue is portability. Software vendors are observing that the most obvious trend is that customers are not scratching their heads over what kind of machine to use for a specific function, as long as it networks.

Though AT&T's Unix operating system has been touted as a solution, there are the obstacles of a lack of applications software and customers to be overcome. It's a catch-22 situation — vendors won't develop the applications without a solid customer base to sell to, and customers won't switch to Unix hardware until they see a good crop of software to harvest.

Conclusions may be slower

The answer may be conversion. According to Dennis Kukulsky, president of Human Computing Resources Corp., "A criticism of Unix has been the lack of application software, but there is a lot out there to be converted. The problem is that to code in C is very difficult and expensive. This is a prime case [in which] we need these fourth-generation productivity tools to get Unix applications on the market."

Still, there was the general notion that Unix would show ahead and eventually prevail as an operating system, since heavy hitters such as Sperry Corp. and NCR Corp. were standardizing their high-end hardware around it. But that still leaves the question of which variation of Unix will prevail.

Artificial intelligence is another issue with which practically every software firm is trying to come to grips. Though not firmly entrenched in the commercial arena yet, most predictions tout AI as the future direction of the software industry itself.

Ian MacLachlan, vice-president of Logiware, Inc., predicts that AI will gradually integrate into the traditional software worlds of tools and applications. A major component will be expert

systems — the practice of embodying human expertise in software.

Thad Combsley, president of Basic Software Group, Inc., said his company has been taking a hard look at expert systems, expecting that they could have a strong impact on the perpetual problem of user interface.

"We don't expect generic expert systems to be of much use. Solutions become user dependent, and systems will have to be custom-made to

provide them," he said.

But least software developers comfort themselves with the idea that AI will be the last hurdle for a while. Paul Bennett, vice-president of research for Netron, Inc., shared a sobering observation: "With parallel processing just around the corner, we could all be living in a fool's paradise. Software vendors haven't been thinking about this and the profound changes it could bring about."

SYSTEMS SOFTWARE

IS Optimization, Inc. has announced a Tektronix, Inc. 4810 emulator for Hewlett-Packard Co. HP 300 series microcomputers running Pascal 3.1 or 3.2.

The emulator permits either full screen display or windowing onto the full T4010 screen size, a spokesman said. The package provides output capability to

any HP-supported printer or plotter for hard-copy display.

The T4010 is offered as an add-on feature to the company's HP 3533 emulator running under its compatibility mode. This allows files and HP text and graphics to be transferred between the HP 300 and the HP 1000, HP 3000 and HP 9000 processors.

The T4010 costs \$550. Optimization, 61 Fuzze Road, Atherton, Calif. 94025.

How to draw

**IBM 3270 PC/G**

If your department gets repositioned for presentation graphics, IBM has the answer.

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The 3270 PC/G or GX gives you easy access to host-based graphics and data. And, with IBM's new Graphics Editor and Picture Plotting software, you can work efficiently to draw your own high-resolution charts, diagrams and free-form sketches.

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tablet. What's more, you can select from a wide range of colors, lines and type styles to arrive at a presentation that works the best for you.

If you want to create foils for a business meeting, just zoom and scroll to position the graphics you want to reproduce. Then use IBM's Picture Plotting to plot the results. You also get a handy graphics index, so you can file and retrieve pictures for future presentations.

But there's more to the 3270 PC/G or GX than just pretty pictures. Each system can display up to four host graphics

SOFTWARE & SERVICES

IBM *from page 23*

■ **Enhancements to the Subsystem Data Analyzer menu design.**

■ **Availability of the Cross System Product/Application Development Version 1 and Cross System Product/Application Execution Version 1 under IBM's VSE/AF Version 2. The Cross System Products also now support CICS/VS, MVS/TSO, REXX/VSE and VM/SP CMS. The former product carries a one-**

time charge of \$6,000 or a \$108 monthly charge. The latter has a \$4,000 one-time charge or a \$150 monthly charge.

■ **Data Facility Data Set Services Version 2.1 for EA/370 or IBM 870 mode. Version 2.1 now includes a function to support Dead conversion, Dead space management, logical data set processing and expanded data set selection criteria. The monthly charge for the product is \$215.**

■ **The System/26 Cryptographic Facility. The product is compatible with the IBM 4700 Planes Communications Subsystem and includes capabilities for encryption and decryption of data allowing the user to create, protect and organize cryptographic keys used by a system.**

Other encryption operations include capabilities for generating personal identification numbers for financial institutions and message authentication codes to deter-

mine if data has been tampered with. The product is available immediately for a one-time charge of \$4,000 or a \$250 monthly charge.

■ **Teleprocessing Network Simulator Version 2.3 for MVS, MVS/XA and VM/SP. The product was designed to test on-line applications programs, control programs and networks.**

Enhancements include an Advanced Communications Function/View application program, said to eliminate

the need for a communications controller in some testing environments.

Version 2.3 will automatically be sent to current users. The product is available immediately.

■ **Release 8 of Device Support Facilities for MVS and MVS/XA. It also supports IBM 3380 models running VSE/AF and runs as a stand-alone version.**

Functions for the program are necessary for initialization, surface maintenance and error recovery of supported fixed-block architectures and count-key data Dadds. The product also includes the ability to default the I/O devices in the console. Release 8 will be available this month.

■ **Version 2 of the System/26-to-System/38 Conversion Aid that now supports functions added to the System/26 System Support Program Release 2. The product will be available this**

99

Other encryption operations include generating personal identification numbers.

month and carries a one-time charge of \$600.

■ **Non-SNA Interconnection Licensed Program Releases 2 and 3 for the IBM 2735 communications controller. The product is an enhancement to IBM's networking program and allows the 2735 to select RJE devices and network job-entry subsystems.**

The facilities can transport biynchronous communications data through the SNA network and share the use of the Synchronous Data Link Control network links. The product now includes support for the IBM Displaywriter in the IBM 2780 mode, as well as support of VM/Pass-Through-to-VM/Pass-Through connections.

Release 2, which will be available in October, operates under MVS/XA, MVS, OS/VS1 and VSE/AF with ACF/NCP Version 2. Release 3 will be available in December and operates under MVS/XA and MVS with ACF/NCP Version 3. The versions have a one-time charge of \$1,600 or a \$465 monthly charge.

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IBM 3270 PC/GX

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SOFTWARE & SERVICES

DBMS from page 23

just as one of the most important aspects of the technology.

If users are willing to purchase a data base machine from one of today's relatively unknown vendors, rather than simply wait for their current hardware supplier to offer a similar machine. That may take some time. Computer manufacturers are more than happy to push software DBMS that chew up more and more hardware resources.

Users are convinced that data base machines can solve their productivity problems. Productivity is seen as a primary concern and one that outweighs such concerns as data storage constraints and the linkage of disparate processors.

Those are weighty conditions. Thus, it is no surprise that pundits parry over the fate of data base machines. Scott Smith, vice-president of Gartner Group, Inc., said he believes the data base machine market is in a nascent stage and could grow rapidly. Michael Geras, vice-president in research with E. F. Hutten & Co., said he thinks there is no significant interest in data base machines.

Los Gatos, Calif.-based Britton-Lee, Inc. seems to be doing fairly well in the mini arena. The company has installed about 500 of its Intelligent Database Machines (IDM) and predicts roughly a 65% revenue growth for the upcoming fiscal year.

But the mini world is light-years away from the IBM-dominated mainframe world, where only Los Angeles-based Teradata Corp. has thus far ventured. The company has installed about a dozen of its DBC/

1012 data base machines and it hopes to ship at least twice that many in its upcoming fiscal year.

In addition to the previous mentioned above, however, Teradata faces what may prove to be an insurmountable obstacle. The fledgling company is going against IBM in what William Immon, a director at Coopers & Lybrand in Denver, called the heart of Big Blue's operations.

"The problem facing Teradata is not the technical aspects of its product, not the fact that it is a data base machine," Immon said. "The real problem is the marketplace it is trying to penetrate. It is trying to compete against the IBM [30 series] processors."

Ronald Ross, editor of the "Data Base Newsletter" published by Boston-based Data Base Research Group, emphasized Immon's point. "There is

a lot of skepticism, and it isn't about the machine's capabilities," Ross said. "Most users in the IBM world are not accustomed to a multiple hardware vendor configuration. That is not so true in the mini world. But the data base machine could, conceivably, obsolete the mainframe. It could act as a data management node with midsize processors and micros attached. IBM has demonstrated the capacity to blow out any competitor like that."

For the time being, the attitude toward data base machines appears to be one of "wait and see." Will the conditions impeding the adoption of data base machines be met? Time will tell. It will be interesting to see how the data base machine vendors, each with its own target audience, philosophy and architecture, fare in a market that remains skeptical.



Teradata Corp.'s DBC/1012 data base machine

IBM announces videotex tools

NEW YORK — IBM has announced Videotex/370, which allows an IBM mainframe to serve as a videotex host, and PC/Videotex-Graphic Artist Facility (VTXGraF), for enabling an IBM Personal Computer to create color graphics for the host system.

Videotex/370 can run with other applications in MVS/CKS environments. The Videotex/370 product was developed by Videodial, Inc., in conjunction with IBM, and is being sold under a nonexclusive licensing agreement. VTXGraF was developed by IBM and incorporates a program from Cablenet, Inc. under an exclusive licensing agreement.

The PC/Videotex program enables an IBM Personal Computer to create pages of videotex information combining color graphics and text.

Videotex/370 is priced at \$75,000 and is scheduled for early 1986 availability. VTXGraF is priced at \$2,500 and will be available in September.

IBM also announced two videotex services from the IBM Information Network. Videotex/370 Application Development Service enables subscribers to develop videotex applications on the network. Users are billed for on-line time. Videotex/370 Host Attach Service allows subscribers to use the Information Network to deliver their videotex service to end users. It has a fixed monthly charge.

IBM is located at 900 King St., Rye Brook, N.Y. 10573.

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MICROCOMPUTERS

Hyperdrive boosts speed of Mac business software

By Kathleen Sullivan
CW West Coast Bureau

LAKE TAHOE, Calif. — Homestar, a property management firm based in this resort community, depends on its Apple Computer, Inc. Macintosh computer to provide services to its clients. Until a couple of months ago, however, Homestar president Steve Kubby was disappointed in the computer's performance.

"It was not the serious business machine I thought it was," said Kubby, who described the Macintosh as a slow, cumbersome system that could not keep up with his secretary's rapid-fire typing.

But the situation has changed dramatically since Homestar bought Hyperdrive, an internal 1086-byte hard disk drive for the Macintosh, designed by Cambridge, Mass.-based General Computer Co. Although the transition was not a smooth one — it took three installations to get a trouble-free unit — Kubby is an enthusiastic user.

"I now have a business machine that makes me apologize to anyone," he said.

The Hyperdrive, now running "like a well-tuned clock," has transformed the Macintosh, he said. "It's such a treat to zoom down a list with data popping up and not have to wait for the computer to catch up with you."

Kubby's remarks were echoed by other users, who praised the Hyperdrive's speed and ease of use. "It's a very impressive product," said Joe Garapolo, manager of Macintosh software development for New York-based Post, Marwick, Mitchell & Co. "Its speed is not approached by any other hard disk drive."

Garapolo said the accounting firm, a beta test site, discovered problems in an earlier release. But a second unit has performed without a hitch. Garapolo said the firm had done an excellent job designing the Hyperdrive's system software, which allows users to partition the drive into 23 drawers.

Rich Richardson, national director of microcomputer technology for the Young & Co. group, saying that the Hyperdrive

See FACTORY page 51

IBM micro, videodisk aid in training

By Edward Warner
CW East

WARREN, Mich. — When a company newsletter comes out, most employees are likely to flip through its gray pages and give it a quick leave-be. A pioneering program scheduled to get under way last month at General Motors Corp.'s Technical Center here, however, hopes to use laser disk-based video displays to present company news more colorfully.

The GEM program, being developed by its Electronic Data Systems Corp. (EDS) subsidiary, relies on Matick, Mass.-based Vantage, Inc.'s marriage of the IBM Personal Computer and a laser videodisk player.

Twenty of the Vantage machines, called Vdisplays, will be placed at various locations around the headquarters of GM's Chevrolet/Pontiac/Cadillac division. They will be used to "publish" a video company newsletter with which employees can interact.

See FACTORY page 50

■ A 1,200 bit/sec. modem card for IBM Personal Computers, priced at \$198, debuted from Carmeltek Microelectronics/43

■ IBM upgraded its Personal Computer Basic Compiler/43

■ AST Research introduced a 2M-byte expanded memory board for the IBM Personal Computer/43

NEWS

Software/45

IBM the buyer's choice as micros go blue collar



SMALL TALK
Edward Warner
CW East West

With the office already swash in personal computers, micro will next work their magic on the factory floor. The year 1985 could mark the start of a revolution in automation similar to that wrought in offices in 1981 when IBM first introduced its 16-bit workstation.

Consider the evidence:
■ IBM's year-old 8631, a Personal Computer in a hardened case for factories, outside IBM's Personal Computer

AT, according to Peter Cohen, a factory automation analyst with International Data Corp. He added that a large number of nonhardened Personal Computers also find their way into the factory, a place no longer usually filled with flying sparks and smoky haze.

■ At the recent Robots 9 show in Detroit, one of the hottest items was not an advance in robotics but an enhancement of the old standby of factory automation, the programmable controller.

The enhancement was the incorporation of a personal computer into a programmable controller — truly a PC within a PC.

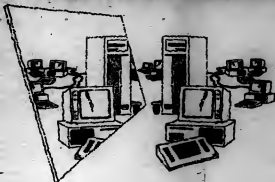
■ The use of computer-aided design software for personal computers is

spreading. Though not a new idea — Autodesk, Inc. pioneered the market with its Autodesk software — personal computer CAD products are proliferating. The boom is being spurred by advances in personal computer technology in general and the Personal Computer AT in particular. A 65% growth rate is projected for the personal computer CAD industry, which will hit the \$1 billion mark in software and systems revenue by 1990, according to a recent market research report from Technology and Business Communications, Inc.

■ The adaptation — by users — of Lotus Development Corp.'s 1-2-3 spreadsheet for on-the-spot analysis of factory

See FACTORY page 51

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MICROCOMPUTERS

HP unwraps IBM micro-compatible disk, tape products

By Jeffrey Hunter
Of West Coast Business

CUPERTINO, Calif. — Hewlett-Packard Co. today entered the IBM Personal Computer-compatible storage business with the introduction of two hard-disk units and a 4-in. streaming tape module.

To its existing 10M-byte 9154A and 20M-byte 9154H Winchester disk models HP has added the necessary interface cards, cable and software utilities to enable the two products to support the Personal Computer, Personal Computer XT and AT and Compaq Computer Corp. Portable Computer, the company said.

For the first time, HP is also now offering a 60M-byte tape backup sys-

tem that reportedly works with either the company's Touchscreen family of micros or with its IBM and IBM-compatible equivalents. Unlike the 9154A and 9154H hard-disk units, which were available with the Touchscreen before they were adapted to provide IBM compatibility, the 9142A streaming tape module is new.

Product strategy revised

In functionally enhancing and reintroducing its Winchester offerings, HP is reviving a product strategy that reportedly was used to good advantage on the output side of its micro peripheral line.

Although its low-end plotters and printers were originally intended to

be sold primarily to its own customers, HP later broadened the output devices' target audience to include users of IBM Personal Computers as well. Now, the company is again diversifying the intended market for its microcomputer peripherals — but this time at the mass storage end, according to John Boone, a marketing manager with HP's Greeley, Colo., division.

All three of the IBM-compatible additions to HP's disk and tape product line cost about \$300 less than the comparable units previously sold with the Touchscreen family.

The 20M-byte 9154H provides twice the capacity and 30% greater throughput than a Personal Comput-

er XT disk storage upgrade for \$100 less, Boone said. Backup for the 9154H and its 10M-byte sister product is supplied by the 9142A streaming tape unit, which copies hard-disk files at 2M bytes/min, Boone said.

The 10M-byte 9154A, meanwhile, is aimed at users who have exhausted the capacity of their floppy disk-based IBM Personal Computers and need to upgrade to a Winchester disk system.

Available immediately for customer delivery, the 9154A, 9154H and 9142A cost \$1,400, \$2,500 and \$1,800, respectively.

HP is headquartered at 3000 Hanover St., Palo Alto, Calif. 94304.

Kodak announces plain-paper printing: the lowest-cost retrieval you can buy.

Presenting the Kodak IMT-350 microimage terminal and the Kodak Starvue II reader-printer, the first image management work stations from Kodak with the plus of plain paper printing. And unmatched retrieval savings.

Both units offer high-speed front delivery of positive prints from either positive or negative film. Under 24-s print economy. Improved work flow. Labor and materials savings. And the means to increase your productivity up to 50%.

These new, advanced work stations bring operator and operations closer together. All controls are within a 12-inch reach, so there's less time spent getting to the information, more time with it.

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New KODAK IMT-350
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with Plain Paper Printing

IBM micros get modem

SUNNYVALE, Calif. — Ceramtek Microelectronics, Inc. has introduced a 300/1,200 bit/sec. modem card for the IBM Personal Computer, Personal Computer XT and Personal Computer AT that sells for \$185.

The Info-Modem 1200FTC modem reportedly permits the microcomputer to transmit voice or data calls either directly from the keyboard or from a 200-name disk-based phone directory, Ceramtek said. Accounting strings for data base servicing also may be stored. QC-Modem, a windowing communications software package, is included with the modem, the vendor said.

The product is compatible with Hayes Microcomputer Products, Inc. modems and will operate with most popular communications software packages, such as Microvut, Inc.'s Cromstalk, Highland Press' PC-Talk II and Lotus Development Corp.'s Symphony, according to the vendor. It supports Xon/Xoff, Parity, Xmodem and Xmodem CRC file transfer protocols. Other features include autoanswer and automatic selection of speed and parity.

More information is available from Ceramtek at 1906 Berrugas Ave., Sunnyvale, Calif. 94089.

Lotus to offer Spotlight tool

CAMBRIDGE, Mass. — Lotus Development Corp. has announced that it will market Spotlight, a desktop manager for the IBM Personal Computer, at a price of \$75.

Spotlight, which Lotus acquired through the purchase of Software Arts, Inc., reportedly includes a notepad, on-screen calculator, phone book, appointment book, index card file and a DOS filer.

The accessories are said to appear as windows, which can be called up while an application is running or by themselves.

Lotus is headquartered at 65 Cambridge Pkwy., Cambridge, Mass. 02142.

MICROCOMPUTERS

AST Research introduces memory board for IBM micro

IRVINE, Calif. — An IBM Personal Computer memory board that provides up to 2M bytes of expanded memory, and reportedly supports and improves upon the Lotus/Intel Expanded Memory Specification (EMS), has been introduced by AST Research, Inc.

According to the vendor, the Rampage board requires less software overhead and offers a more flexible paging scheme than does the EMS specification, developed by Lotus Development Corp. and Intel Corp. AST said the board was created from a super-set of the EMS specification.

Rather than allocate a single 64K-byte window in high memory (the area from 640K bytes to 1M byte) for paging, as does the standard EMS, the AST board reportedly permits applications software to exchange data into all of the available 16K-byte blocks in high memory. This feature doubles the potential paging area, the vendor said.

Rampage also is said to offer split memory addressing, under which the board's memory is added to the Personal Computer's existing random-access memory (RAM) until the 640K-byte level is reached. As many

as four Rampage boards reportedly can be installed to bring a Personal Computer's memory up to 8M bytes beyond the 640K-byte threshold.

A Rampage software driver, included with the board, is said to operate transparently to the user. Rampage is bundled with AST's Superpak utility software, which includes Superdrive, a RAM disk simulator. The board will be available in July for \$696 with 256K bytes of memory.

For more information, AST Research is located at 2121 Alton Ave., Irvine, Calif. 92714.

IBM unveils enhanced micro Basic Compiler

WHITE PLAINS, N.Y. — IBM has announced an enhanced version of its Basic Compiler for its Personal Computer.

Personal Computer Basic Compiler 2.0 reportedly supports IBM's Top-view operating environment and PC Network. It includes such program control structures as named subroutines, user-defined multiline functions, separately compiled Basic subprograms and the ability to branch to alphanumeric labels.

The enhanced version also permits larger programs to be compiled, with instruction space separated from

data space. It supports large numeric dynamic arrays, with the maximum index for any dimension of a numeric array now at 32,767, IBM said.

Other features are said to include expanded access to IBM's PC-DOS, support for redirection of standard I/O, addition of an input editor and new metacommands.

The product costs \$396. Users of the IBM Personal Computer Basic Compiler may upgrade for \$196.

IBM Information Systems Group's National Accounts Division is located at 1125 Westchester Ave., White Plains, N.Y. 10604.

Micro-MRP introduces two modules

FOSTER CITY, Calif. — Micro-MRP, Inc. has introduced two modules for use with its MAX, The Production Manager material requirements planning (MRP) software for the IBM Personal Computer.

One of the modules, Just-in-Time (JIT), reportedly supports the just-in-time style of MRP pioneered by Japanese firms. JIT permits a manufacturer to reduce the amount of raw materials that must be stored on site, cutting inventory costs.

The Micro-MRP JIT module features a system of prioritization that gives production priority to those orders that are needed and available, according to the vendor.

It also provides lead and queue detail and summary reporting to concentrate attention at the work center level and displays exceptions (orders that are needed and not available or available but not needed). Also included is a manual override feature that allows managers to permit exceptions.

The Data Collection Module reportedly prints automatic audit trails and tracks shop floor completions, scrapes and order splits. According to the vendor, it also interfaces with most data collection devices for personal computers.

The JIT module sells for \$4,000. The Data Collection Module costs \$2,000.

Micro-MRP is located at 1065 E. Hillside Blvd., Foster City, Calif. 94404.

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notepads while simultaneously running a PC DOS session. IRMAX Graphics and IRMAX Multi-Sessions are available in board-form, but if you're currently an IRMA user, there's also a simple conversion kit. And IRMAX file transfer software products make it possible to upload and download quickly in a number of different operating environments.

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MICROCOMPUTERS

Terminal emulation tools announced for IBM micro

ST. LOUIS — Polygon Associates, Inc. has introduced its Poly-Com/230 terminal emulation and file transfer software, an addition to the company's family of terminal emulation and file transfer programs.

The Poly-Com/230 package reportedly allows the IBM Personal Computer to be used as a Digital Equipment Corp. VT52, VT102 or VT230 terminal and allows file transfers between the IBM Personal Computer and another IBM Personal Computer or a DEC minicomputer.

Poly-Com/230 resides in the microcomputer's memory and can be ac-

cessed by a hot key.

All VT100 and VT200 keys are implemented, as are DEC's international 8-bit character set and the Compose key, according to Polygon Associates.

The system is backward compatible with previous Poly-Com packages. Users of previous versions can upgrade to the Poly-Com/230 version for \$52.

The package costs \$260, the vendor said.

Polygon Associates is located at 1054 Executive Pkwy., St. Louis, Mo. 63141.

SOFTWARE

■ Software Services of Tampa, Inc. has introduced its Lease Vs. Purchase Analyzer software for the IBM Personal Computer.

The software is said to be a menu-driven program that performs an analysis of the cheapest method of equipment acquisition. The analysis can be performed on a present value, after-tax basis. Before-tax and raw dollar amounts can also be shown.

The software reportedly also performs purchase conversion and lease buy-out analyses of an existing lease. This would permit users to determine whether it would be less costly to exercise a purchase option than it would be to remain on a lease, the vendor said.

The software is priced at \$196 and

requires at least 128K bytes of memory and one diskette drive.

Software Services of Tampa, Suite 1001, 4410 Ranschauch Lane, Tampa, Fla. 33624.

■ National Information Systems, Inc. has announced that its YUE project management system is available for the IBM Personal Computer XT and AT and compatible under Microsoft Corp.'s MSD-DOS operating system.

YUE uses the critical-path method to track up to 3,000 activities per project. Ninety-nine related projects can be scheduled and tracked, the vendor said.

Fourteen reports are said to be standard, including printer graphics output of bar charts and network diagrams.

The package costs \$866. National Information Systems, Suite 130, 35070 Town Center Lane, Cupertino, Calif. 95014.

■ Breakthrough Software Corp. has announced an enhancement of its Time Line project management software for the IBM Personal Computer line.

Time Line 2.0 reportedly includes support for an unlimited number of resources and costs for each project. A resource may be defined as either a person or a resource pool, and managers may allocate all or part of the resource to a particular task. Time Line is said to monitor resource allocation continually and to advise the user of overscheduling.

Time Line 2.0 also is said to define fixed, unit or variable costs for each cost category. The number of digits for an individual cost has now risen to eight, allowing a single cost up to \$100 million.

Also added are reporting features, including an earned value analysis report and two table reports that summarize either task or resource information. Cost reports can tally either total dollar amounts or man hours, the vendor said.

Time Line 2.0 is priced at \$496. Registered users may upgrade for \$75.

Breakthrough Software, 505 San Marino Drive, Novato, Calif. 94947.

■ Control Data Corp. has released its Cybernet/Express Project Manager software system for the IBM Personal Computer XT and compatibles that is said to help engineers plan, control and track projects with as many as 16,000 separate activities.

The system provides critical-path scheduling, resource leveling, management reporting and graphics capabilities, the vendor said. It integrates Primavera Systems, Inc.'s Project Planner and its Primavera plotter interface with the Cybernet/Express series of engineering applications systems.

The Project Manager costs \$4,450. Control Data, 6100 34th Ave. S., Minneapolis, Minn. 55440.

■ Texcalc Software, Inc. has introduced a tax planning template for use with software such as Lotus Development Corp.'s 1-2-3 on the IBM Personal Computer.

The software, Corporate Tax Plan-

Continued on page 50

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The Invest in Britain Bureau and Peel, Marwick, Mitchell & Co. are holding a BRIEFING ON BRITAIN in Chicago on July 16, 1985, during the National Computer Conference. The briefing is specifically designed for executives whose companies are considering expanding in Europe. It will be given by David Tappin MP, British industry minister; John Airey of British Telecom; and Mark Arvin of Peel Marwick. There will be ample opportunity for questions and private discussion.

To register, contact Edith Jaffe, British Consulate-General, 845 Third Avenue, New York, N.Y. 10022. Telephone (212) 293-2258. Or come talk to us during NCC at the Invest in Britain Bureau and Scottish Development Agency booth, number 1231/1232/1233.



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MICROCOMPUTERS

VISAGE from page 41

More than 5,000 employees will be able to use the system's color touch-screen monitor to call up short video segments on GM's latest corporate news or to add their vote to a weekly opinion poll. Their responses to that poll will be stored on each V-Station's hard disk, combined with those of all respondents and displayed in a graph on the system during the next week.

GM is one of the first to use the V-Station, introduced last November. Its use is also unique; most other early users have put the machines to work providing interactive employee training.

A user of the more traditional stripe is Gould, Inc.'s Programmable Controller Division in Andover, Mass., which is using V-Stations to develop training for users of Gould's Numeric Controllers (NC), one of the simpler forms of factory automation equipment.

Gould is using 10 VS 2006 machines — each of which comes with 512K bytes of memory, a 5¼-in. diskette drive, 10M-byte hard disk and touch-screen monitor — to write instructional software for three training courses that it plans to market this fall to buyers of its Gould 564 programmable controller. The courses, each on three videodisks, will include one for factory electricians on programmable controller maintenance, one for plant supervisors, offering an overview of the 564, and one for OEM customers.

Rely on interaction

Like any application for the V-Station series, the Gould courses will rely on the interaction of the videodisk player and instructional software running on the system's Personal Computer. That interaction is brought about by the videodisk controller board, inserted into the Personal Computer, and the instructional software, or courseware, authored by the user.

To author its courseware, Gould is using Troy, Mich.-based Sandy Corp.'s System for Authoring Microtraining (SAM), a package that, according to Richard Michaels, Sandy account director, is entirely menu driven and requires no programming

skills. Michaels explained that the courseware for the V-Stations begins life as a flow chart, or storyboard, which maps out the structure the course is to follow.

The storyboard is made up of segments, each combining video in the form of a still picture or a film clip with an overlay of text. Each segment is produced separately, but when they are combined, "it turns into a runtime package," Michaels said. Depending on the student's answers to the course's occasional quizzes, the courseware will skip ahead one or several events or jump back several events for a review.

"Satisfies everything we need"

Richard Bell, director of training and development for the Gould NC division, said SAM "satisfies everything we need to use it for," but added

that authoring the courseware was only part of the job. The six who worked on the course for Gould 564 training, he noted, will have spent nearly six months on the course when it premieres Sept. 1.

The best feature of the Visage machines, according to Bell, is that they are based on the Personal Computer, a machine that can be used for other office automation tasks. As he put it, "a customer doesn't have to go out and pop down \$12,000 to buy a lot of equipment that is just for training."

Though the V-Stations include a Personal Computer, they do not include a videodisk player. Visage said that almost any videodisk player, including those of Hitachi America, Ltd. and Pioneer Electronics, will interface with it.

Bell said there have been no hardware or software problems with the

V-Stations and that Gould has received "incredible on-site support," from Visage. "Anything we've asked them to do," he said, "they've been willing to do."

At GM, the V-Stations can newsletters are being programmed to run a series of eight 4- to 5-min. GM "featurettes," which users can choose via a touch-screen monitor, according to Mike Allie, an EDI account manager handling the GM project.

Allie said the feature of the V-Stations he liked most was that "their learning curve [was] very small." This ease of use, he explained, "insulated the developer from getting involved in the little details." It also sped development time. The machines were acquired in March and the first prototype of the electronic newsletter was ready in one month, he pointed out.

If the space program had advanced as fast as the computer industry, this might be the view from your office

Continued from page 46

ner, reportedly offers users the ability to compare the minimum tax, the alternative tax on capital gains and credits and special deductions.

The software is said to interface with other applications including Lotus' VisiCalc IV and Microsoft's Multiplan.

Corporate Tax Planner costs \$150. Taxwale Software, 4510 W. Vickery Blvd., Fort Worth, Texas 76107.

Software Studios, Inc. has announced enhancement of its PC-Desk desktop manager software for the IBM Personal Computer.

PC-Desk II reportedly offers memory partitioning, which permits two programs to be active at the same time. With a single command, users may switch between programs. Also included is a cut-and-paste command.

The package is available free, but a \$49 registration fee reportedly entitles the user to telephone support and free updates of the software.

Software Studios, 8516 Sugarbush, Annandale, Va. 22003.

MICROCOMPUTERS

FACTORY from page 41

floor data is increasing. Shop floor managers are using 1-3-3 because they want to make corrections as needed, noted Sandra Gunn, vice-president and general manager of Lotus' Engineering and Scientific Products division. "By the time they get the information back from their mainframe or from their MRP [material requirements planning] system, it's too late," she said.

Ultimately, that is what drives the factory floor boom in personal computing — a need for quick responses. Ironically, at a time when talk runs high about getting factory floor devices to communicate with the corporate mainframe, the micro is coming to be seen as the solution to the mainframe's weak points, such as high cost, slow response

time, and data center tyranny.

For those who believe the factory should be completely tied to the corporate mainframe, William Rankin, a Deere & Co. manager for computer-aided manufacturing, argued that this is an outdated concern. "One of the problems we've had in the past," he said, "is that data didn't stay in the plant."

Like the personal computer revolution in the office, the onslaught of the blue-collar personal computer will be fueled by software. In the short run, new applications will include such products as the integration of graphics with MRP packages. In fact, Micro-MRP, Inc. promises such a package by the year's end.

Also on the horizon, according to Micro-MRP President David Meyer, is software that integrates MRP with CAD, allowing the mainframe to

download a robot's operation program, for example, to the shop floor personal computer.

With the spread of personal computing to the factory come concerns much like those presented when a horde of micros reared their screens in the office. There is one difference: Most factory users are buying only one brand of computer — IBM.

Another positive sign is the imminent arrival of full specifications for General Motors Corp.'s Manufacturing Automation Protocol (MAP), which would permit a factorywide local-area network that handles products from diverse manufacturers. With IBM supporting MAP and factory users demanding more and more Personal Computers, the final irony may be that the boom in factory personal computing is in truly blue-collar computers.

DRIVE from page 41

Hyperdrive was eager to use that other hard disk drive, its software, which conforms to the Macintosh user interface, is said to allow users to create and name a file drawer, add a password or encrypt a file by using pull-down menus, dialog boxes and a mouse.

The Hyperdrive reportedly allocates memory dynamically. Since the software partitions the 10M bytes of storage as files and drawers are created or deleted, users do not have to decide ahead of time how to divide up the memory, Richardson said.

Partitioning also speeds up the performance of the Macintosh operating system's Finder software, users said. Users can mount the file drawers to be used in a work session on the Macintosh desktop, while other drawers are hidden.

"The advantage of partitioning is that the Finder doesn't have to look through a vast reservoir of 10M bytes of memory," said Jay Friedland, vice-president of operations for Turning Point Software, Inc., a Woburn, Mass., software firm. On a 10M-byte hard disk drive, he said, users would wait a long time for the Finder to come back, he said.

Garappolo and Richardson, who are evaluating a backup utility for Hyperdrive, gave the program high marks. The utility allows users to back up individual files or drawers, or perform "incremental backups," which back up the files in a selected drawer that have been created or modified since the last backup.

Then there's the real computer

According to Friedland, Hyperdrive "turns the Macintosh into a real computer." It improves the performance of Macintosh applications software, most of which is disk based and therefore slower. "With Hyperdrive, it still goes out to disk, but you don't notice it anymore," he said.

"Under Hyperdrive, Macintosh is tremendously improved," he added. "On a floppy disk-based system, we had problems sending at high speeds. At 9.6K bit/sec. it would drop characters when we were transferring data from one personal computer to another. We don't have problems like that anymore."

Garappolo voiced a concern about the long-term effects of the drive on the Macintosh, noting that the installation added a second power supply, a fan and a piggyback circuit board. "I wish Apple would come out and say, 'It's a great product, and it won't harm the internals of the Macintosh' or say, 'Stay away from Hyperdrive, it hurts the Mac's internals,'" he said.

Garappolo also worried about the effect of future Apple upgrades to the Macintosh, pointing out that there was no assurance Hyperdrive would be able to interface with an enhanced Macintosh. Nevertheless, he is sold on the drive. "I have real concern," he said. "But at the same time I love using Hyperdrive."



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MAINFRAME SOFTWARE STANDARDS

When mainframe software vendors conform to standards of design, development and support, users benefit. A modular design and intelligent architecture shorten learning time and lower the cost inherent in adopting hardware and applications changes.

By Robert Healy

Despite its general success, the applications software industry is not as effective or efficient as it could be in building new products or supporting existing ones. The reason is because the industry lacks standards for designing and supporting mainframe applications software.

Today's software offerings are typically updated by patching — adding layer upon layer of corrective or enhancement code to application logic built years ago. Perhaps that is the only way to change old monolithic programs. But the resulting code is convoluted and nearly impossible to maintain. Patching leaves the user burdened with an outdated product.

In many cases, the term "standards" is confused with an exhaustive list of product features. Often vendors operate on the assumption that what is best for them is best for their users.

Setting standards will enhance productivity industrywide. Here are 15 possible industry standards. Ten deal with product design and five with support and service.

IN DEPTH/CALL FOR STANDARDS

Product design standards

Standard 1: Applications software product design must utilize an intelligent architecture, one that isolates key system components in a modular fashion to accommodate changes in operating environments and technologies.

The major building block of a software product is its architecture. An intelligent architecture is completely modular in nature. Its intelligence is characterized by its ability to adapt to change.

What constitutes an intelligent architecture? Consider the following components:

- Applications interface to data bases controlled by a service module external to the application logic that translates or reconverts logical data views.

- Applications interface to data bases controlled by a service module external to the application logic that translates or reconverts logical data views.

- Applications interface to teleprocessing monitors handled by a service module.

- Dictionaries containing screen layouts, error messages, help text, definitions of data base elements and editing rules to permit easy maintenance, user modification and multi-lingual formats.

- An open architecture permitting easy access to other applications and utilities. As a result, applications products can be integrated with other proprietary applications.

To date, most applications software is partially modular in structure and has an unintelligent architecture. The major benefit of an

intelligent architecture is that it insulates the user against dislocations caused by change. For example, a company can change its software environment or respond to new hardware technology by replacing one module in the applications software product rather than having to replace it entirely.

A user can move to a new data base management system or teleprocessing environment without impacting applications and without a major conversion effort. Additionally, generic functionality reduces the user's learning burden by creating an environment of similar products. Users can tailor applications without modifying code because of flexible data and editing rules. Productivity is enhanced by individually tailored screens, messages and help text.

Using an intelligent architecture

allows software suppliers to support and update the product more efficiently. The service can be passed on to the user in the form of better service and support.

Standard 2: Applications software must be flexible so that it appears to be designed for each user's individual needs.

Some vendors offer applications software that might be described as "what you see is what you get."

Although these hard-coded packages may meet a buyer's basic needs, they are highly inflexible. Advances in both fourth-generation languages and applications development tools have led to flexible systems that can be tailored to meet users' specific needs. These types of systems are becoming more popular and more affordable.

Software capabilities are required that allow for system tailoring, such as the ability to generate specific reports, to change and build new input and inquiry screens, to define new systems functions and to tailor error messages and help text.

Software systems must incorporate the latest technological improvements — for example, ergonomically designed screens featuring color and visuals, cursor movement and simplified navigation between systems.

Benefits of flexibility

Increased flexibility and custom-tailored applications software give the user individualized solutions.

Product lifetimes are greatly increased because the applications software can respond to change. Productivity is increased because the software can better meet each user's needs.

Flexibility allows for customization, which reduces the burden on the DP department by helping to make users more self-sufficient. In effect, increased flexibility and tailoring applications software gives the user a customized solution at an affordable price.

Standard 3: Applications software must provide the ability for users to combine or chain-process events to reflect their business practices. This is event-oriented software.

When examining how business is transacted, it is immediately apparent that current applications software is structured for DP methodologies rather than day-to-day business practices. Event-oriented software takes traditional business activities and performs information processing for these activities in a logical, sequenced fashion.

With event-oriented applications software, information created by paying a bill or making a sale is transparently utilized. Appropriate software tools update data stored in accounts payable and general ledger systems simultaneously.

By incorporating advances in data handling alternatives, data dictionaries can be expanded to include information about the data stored along with the relationship between one piece of information and another.

The logical relationships that comprise event-oriented systems reduce the number of steps required to automate a business. Thus, productivity is increased and the potential for manual errors decreased. The relationship between users and software is transformed from software-driven to user-driven.

Not long ago, PC Magazine called MDBS III "The most complete and flexible data base management system available for microcomputers." That's a powerful statement. But then, MDBS III is an amazingly powerful software package. So powerful, in fact, that it lets you build mainframe-quality application systems on your micro or mini. MDBS III is not for beginners. It's for application developers with large data bases or complex data interrelationships who want to define data base structures in the most natural way—without resorting to redundancy or artificial constructs. It's for professionals who can appreciate its extensive data security and integrity features, transaction logging, ad hoc query and report writing capability and its ability to serve multiple simultaneous users. And if you want the power and the glory that only the world's most advanced data management system can provide, MDBS III is for you. For information on MDBS III and our professional consulting services, write or call Micro Data Base Systems, Inc., MDBS/Application Development Products, 85 West Algonquin Road, Suite 400, Arlington Heights, IL 60005, (800) 323-3629, or (312) 981-9200. **MDBS III. ABSOLUTE POWER.**

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Standard 4: Applications software must be a working partner in the information center. The system's architecture must allow for easy interfaces and integration with other products and inquiry tools.

An information needs increase in size and complexity, as does the trend for companies to establish information centers that act as clearinghouses for information processing. Activities handled by an information center include recommending software applications products for usefulness, training new users in information technology and coordinating key data processing activities.

Applications software products will no longer be directed to an individual audience. Rather, they will be required to run in an information center environment.

Critical factors in information center compatibility include the following:

- Use of file access and DIME facilities in their native mode. Query and report generation tools used by an information center must have direct access to applications data.
- Integrated and sound applications data base structures.
- Real-time updates of applications data bases where possible.

Software as partner

Offering hooks to tie in other information center software products will make applications software more usable. Less custom coding will be necessary. The applications software will be implemented more easily and quickly.

These factors will help to alleviate today's near-universal backlog of applications development projects.

Applications software as a partner in the information center will increase the quality of information available to users. It will stop being an obstacle to new technology, as it has been in the past.

Standard 5: Applications software must be designed in such a manner that common functions or tasks can be provided through a single, shared software module.

There are many functions common to most applications. For example, navigation, help text, security and inquiry tools all could and should be shared.

Users would benefit most from sharing these functions because they would eliminate the frustration of having to perform repetitions tasks. Needlessly struggling for information that exists in another application also would be eliminated.

The ability to share these common functions has come to be known as generic functionality.

Eliminating the segregation of these functions and the boundaries that their division creates greatly increases productivity. Shared generic functionality in applications products provides several advantages. Access to multiple applications is made easier. Training and learning cycles are shortened. The complexity of the system is reduced. Finally, there is less redundancy in systems development.

Standard 6: Applications software must support the continuing trend toward expansion of functionality to networked personal computers.

The personal computer has revolutionized the concepts of software development, systems design and the

The ultimate goal is to bring applications closer to the user and transfer some of the processing responsibility from the MIS group to the actual user.

relationship between terminals and mainframes.

The partnership between mainframes and personal computers is now represented primarily in micro-to-mainframe links. These links serve principally as vehicles for data transfer. Data analysis is usually handled on the personal computer. Micro-to-mainframe links signal the beginning of an important change. The way in which large and small computers interrelate and relate to

the user is evolving.

In the future, this relatively new technology will serve as more than a medium for data download and upload. The microcomputer will become an integral part of the application itself, especially as mainframe applications software is designed with the personal computer in mind.

Processing that is handled primarily by the host will be distributed to the personal computer. These developments are being driven by the in-

creasing power of the personal computer. The industry's continuing trend toward user orientation has enhanced usability and friendliness.

The ultimate goal is to bring applications closer to the user and transfer some of the processing responsibility from the MIS group to the actual user. The result will be greater departmental productivity and better use of new technology.

In addition, personal computers will be tied together via local-area networks to provide multiple-user access to information. Distributed data bases will be served through personal computers as well. Enhanced communications between these computers will be considered the norm.

The use of personal computers has distinct benefits. These benefits include the promotion of more efficient,

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computer use, which means more programming per dollar spent, strengthened information access capabilities, because barriers are removed between users and the information they wish to access; and the ability to take full advantage of available resources.

Standard 7: Applications logic must be independent from other key components of the applications software product.

The goal is to have applications software universally adaptable to the user's environment. Universal adaptability serves as the user's insurance policy against technological change.

Successfully designing applications software with applications logic independent of all other software system components means that the software architecture must be intelligent,

modular in nature and open. An intelligent architecture allows for independent application logic because the code required to interface with a given operating environment is independent of all the applications programs.

In addition to acting as an insurance policy for change, such an architecture supports the use of tools specific to individual environments.

Independent systems

The savings for the applications software user are twofold. The manpower needed for modifying the applications to meet changes in technology, whether software or hardware changes, are immense.

Also, the time that would have been expended relearning the modified system can be spent more productively.

Applications designed with an intelligent architecture allow for portability to new environments if a change is made. As a result, it is not necessary to change the application to run in a new environment. This significantly reduces system maintenance. Software suppliers can provide enhancements much faster. The result is a greater return on the maintenance dollar invested.

Currently, software suppliers determine the importance of specific hardware and operating systems to their product line and then release application enhancements in the order of the hardware environment's relative importance to the vendor. It can be a matter of months before key features of a product enhancement are brought to additional hardware environments.

Software designed with an intelligent

architecture allows the application code to be segregated from code related to a hardware environment. When code that allows an application to work in a particular hardware environment is designed with an intelligent architecture, changes in the application code can be made and distributed immediately.

By structuring the software system with an intelligent architecture, product enhancements are more quickly available to users. Additionally, customer support is more effective because problems with the product are solely application-oriented and are not embedded in the environment code.

Standard 8: Applications software code must be delivered in a generally accepted programming language and not require use of non-standard or proprietary languages.

When software suppliers provide product features or development tools that increase product flexibility, yet deliver the capability via proprietary software code, a potential problem is created.

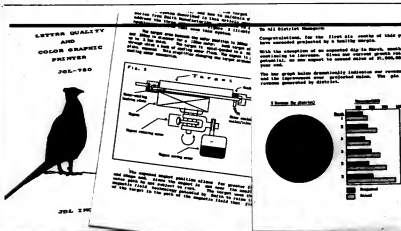
Complications are bound to arise because the software code cannot be maintained by the user. If it is to be updated by the user, a new programming language must be learned. Developing an application with proprietary languages increases the likelihood that the program will someday become obsolete because of programmer attrition. Support and training also are hampered by proprietary languages. Recruiting new employees fluent in the proprietary languages becomes an additional complication. As would be expected, maintenance of such a system, because of its complex setup, is more expensive and time-consuming.

IBM sets the standards for main-frame programming languages. If IBM is using a particular language, it is safe to assume that this language will become a standard in the software industry.

The situation is complicated further by constant alterations and improvements to hardware. Applications development tools must be capable of generating source code that can be compiled on the user's computer. The cost of replacing applications development tools is immense. In some cases, these costs are prohibitive, and the user is limited by the operating environment and the applications software.

Universal product

Applications software delivered in a generally accepted programming language gives the user a universal product. It can be maintained more



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easily because the pool from which to select technical talent is larger. Furthermore, salary costs are kept within reason because the constraints of hiring specialists in the proprietary language are eliminated.

Another factor that reinforces this standard is that a wider array of compatible products will be available to the user. Not only are the risks of choosing an incompatible applications product eliminated, but so are the frustrations caused by limited product compatibility.

Standard 8: Applications software must utilize standardized reporting and inquiry tools so that users can retrieve information easily and not be required to learn and understand MIS concepts.

Users should be able to use any reporting or query product they wish to access an applications data base. Reporting information will continue to be a critical function of applications software in the future. However, a reporting mechanism can no longer require users to understand complex MIS concepts or the ins and outs of data structures. Reporting must be easy to do and understand.

All levels of an organization need to have access to information that will assist in making management decisions. In the past, this process was accomplished by using the DP department to retrieve information or by learning DP-oriented tools.

More often than not, when information is retrieved it is not up to date. This is because maintaining current information is almost impos-

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The cost of replacing applications development tools is immense. In some cases, these costs are prohibitive, and the user is limited by the operating environment and the applications software.

sible. When crucial decisions or analyses need to be made, day-old information is not good enough. Once again, time is lost.

Advances in fourth-generation languages have eliminated the need for having to know DP-specific information in order to have access to data. Reporting tools must be easier to use, especially because of the increasing popularity of the personal computer.

Reporting tools are important to users because they often represent the end result of many information processing activities. A lack of standardization has hindered productivity and limited their usefulness.

With seamless on-line query and cross-application report writers, users will have to learn only one set of reporting tools. As with generic functionality, time and money is saved in training people to retrieve information from a family of applications products. With this facility, the user need only purchase and install one query and reporting product.

Standard 11: Applications software must be developed in an auto-

mated fashion to provide users with high-quality products expeditiously. Ironically, the principal tools of office automation have been developed in a nonautomated, piecemeal fashion. Future software development will, in many ways, mirror today's manufacturing assembly plants. Fourth- and fifth-generation language tools will be used to develop and test applications software code.

Imagine how the system would work: Component software pieces would be developed in different parts of the applications software factory. When needed, universally accepted software components would be taken off the shelf and used to build the applications product.

These products would be modular in nature. Following final assembly, their last step would be testing and quality assurance — as is the case for any factory.

Software development

Incorporating reusable code in new products allows for the product to be developed faster and at a high-

er quality because the code has already been extensively tested. Product releases can occur faster because development cycles are shortened. Reusable code also reduces the number of bugs in a system. This leads to a product that is easier to install and maintain.

Using development tools will increase programmer productivity. For example, designing an input screen with old coding methods could take as long as eight hours. Using tools, this effort can be reduced to a matter of minutes.

The ultimate value of an automated software development environment is higher quality software. An average application consists of 360,000 lines of code. Even a small reduction in the percentage of errors translates to a significant improvement in quality.

Automated tools make sense because they allow software developers to make optimum use of their employees. Repetitive tasks will be reduced. Tools also promote product design that is universal in nature and has highly structured code. The time required to build, enhance and correct a problem is reduced.

Industry standards

The following five standards set goals that a responsive, professional software company should meet to support its user base:

Standard 11: Applications software must be serviced and supported by a dedicated organization.

A full-time, dedicated service organization is critical to the success of

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any applications software product. Establishing and maintaining such an organization is costly but essential.

Support organizations must focus on a comprehensive array of support activities, including education and training, product installation, customer support, continuing education and specialized consulting.

The support group should be separate from the product development team. This separation ensures faster product enhancements and a team of dedicated support specialists. The support team should not be isolated from the development process. By actively tracking a product's development, the team will be able to provide the best support.

With a dedicated service and support organization, users can get direct attention and immediate re-

sponse to questions. It also guarantees that users will have a full range of services to assist them with product implementation, use and enhancement. These factors contribute to a longer product life cycle.

Standard 12: The applications software vendor must supply multi-tiered education and support.

Today's applications software products are sophisticated and complex. The user needs product education and training to receive maxi-

mum benefits from them.

Centralized training is a crucial component of multi-tiered training. Systems users from different organizations should be brought together in a classroom setting for instruction. The classes should be limited to 20 people.

During the sessions, hands-on training should be given with no more than two people per terminal.

In the case of training tailored to an individual company, on-site ses-

sions should be cost-effective. A self-paced, self-teaching alternative should also be available.

No matter where the education and training is to take place, the instructors should be certified educators. They should be supplied with professionally prepared educational materials.

Initial product training is important, but it should be followed up with continuing education opportunities. Through such opportunities, a mechanism will be in place for users to learn about new product features and to share experiences.

A multi-tiered education program allows tailored training programs. Personnel receive individual attention, learn faster and increase comprehension. Continuing education guarantees the maximum value from a software investment.

Standard 13: Applications software must be installed in a quick, clear and effective manner.

Installing a product is often more difficult than expected. The degree of difficulty is directly related to the amount of time and attention a vendor has given to preparing for the installation.

An installation guide is only the first of many features that should be supplied. Conversion programs and job control language are necessities. A trained installation assistant should be on-site to assist with the process. The assistant should run tests and fine-tune the system before it goes on-line.

Effective installation sets the tone for a long-term partnership between vendor and user. Comprehensive installation assistance reduces the uncertainty that accompanies an applications conversion and protects the user's software investment.

Standard 14: The applications software vendor must provide support when the user needs it.

Users often struggle to solve problems common to a broad range of companies. Instead of receiving timely advice, they often are asked to call back in a few hours. Not only should trained, dedicated specialists be available, but there should be an easy way to contact them. A toll-free, 24-hour hot line is one solution. An automated client service system that logs calls and responses would provide a useful inventory of solutions to common problems.

Standard 15: Applications software vendors must limit any product announcements to 90 days before commercial delivery.

Preannouncing products leads to confusion in the marketplace. Limiting announcements to 90 days prior to commercial shipping establishes realistic expectations. This action would eradicate vapourware and lower the number of unmet promises. The 90-day period allows ample time for users to plan for new products.

Standardized lead times for new product announcements will benefit everyone. Rather than failing to answer current needs because of anticipation of a product that never arrives, users can develop realistic solutions to problems.

About the author

Robert Healy is senior vice-president of marketing and planning for Software International Corp., a wholly owned subsidiary of General Electric Software Products Corp., which has been developing and marketing software since 1965.



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Sampling: The smaller view

All people, whether they realize it or not, are aware of the outstanding results achievable with applied sampling theory, a branch of statistics. It is used in political polls and presidential elections, making it possible to predict who will win an election eight to four hours prior to the closing of the West Coast polls.

Sampling theory can be applied to data communications to achieve substantial monetary savings in certain situations. Sampling, however, does not mean voice digitization rates or techniques; these procedures are an example of the general theory.

Sampling is a way to choose and study

a small subset of cases from a large population and to generalize the results, taking into account the entire situation. The generalization can be carried out with high statistical confidence.

The theoretical results are fully developed and are generally understood fairly easily. The classic reference is *Sampling Techniques* by W. Cochran (John Wiley & Sons, Inc., New York). As indicated, sampling theory states that to obtain results about a large population, one need only do the following:

- 1) Determine the population homogeneity.
- 2) Use the theory to obtain the necessary sample size.
- 3) Obtain the scientifically specified sample for which appropriate measurements will be made.
- 4) Adjust the results to fit the whole population using the formula.

See PWL page 70

Minoli is an associate vice-president, systems planning and engineering, of Prudential-Bache Securities, Inc. in New York.

Bell Atlantic IVDM to be sold as CPE

WASHINGTON, D.C. — Bell Atlantic Corp. has unveiled a \$200 integrated voice/data multiplexer (IVDM) that will permit a customer's telephone and a computer terminal to share a copper-wire local telephone line.

The IVDM, manufactured by Telcore Corp. in Kirkland, Wash., permits data communications at speeds up to 19.2K bit/sec. Bell Atlantic said it plans to market the IVDM, classified as customer premises equipment (CPE), in conjunction with its regulated Centrex service, provided that it obtains permission from the Federal Communications Commission.

Currently, Bell Atlantic has two sites testing the Centrex-IVDM configuration, which the telephone company is calling a central office local-area network. The two sites are West Chester University in West Chester, Pa., and Virginia Polytechnic Institute (VPI) in Blacksburg, Va.

Fifty of West Chester University's Centrex lines now support simultaneous 9.6K bit/sec. voice/data communications in an asynchronous mode, connecting on-campus terminals with two mainframes. At VPI, Bell Atlantic said it set up a Centrex 19.2K bit/sec. local-area network to connect 60 on- and off-campus terminals to the university's mainframes, while using the same lines for voice communications.

According to Bell Atlantic, the Centrex service is an important part of its campaign to fight the erosion of the Centrex market to office-based private branch exchanges.

The company revealed that 300,000 federal government Centrex lines will soon come up for contract bid as existing leases expire. According to Bell Atlantic Vice-President of Marketing A. C. Tedesco, obtaining FCC permission to combine the provision of Centrex service with the IVDM CPE is critical to the viability of Bell Atlantic's Centrex service.

"We're asking the FCC for a waiver of FCC rules requiring separation of basic

See PWL page 67

■ The Distributed Systems Research Group has developed a network that links 29 Canadian institutions and that conforms to the CCITT X.400 standard/63

■ Paradyne enhanced its Analysis 5500 series of network management systems and added two modems to its product line/63

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IBM debuts include modems

Offers high-speed duo, short-haul model

RYE BROOK, N.Y. — IBM announced two high-speed modems and a short-haul modem in its mid-June product barrage.

The IBM 5696 and IBM 5695 are synchronous modems reportedly designed for point-to-point or multipoint, four-wire, unconditioned leased lines. The 5696 works with trellis-coded modulation and transmits data at up to 14.4K bit/sec. with a fallback speed of 12K bit/sec. The 5695 operates at 9.6K bit/sec. and falls back to 7.2K bit/sec. when lines degrade, the vendor said.

The modems are said to include a keypad and a display panel that can be used to configure the modem or illustrate line parameter statistics. The products are available in stand-alone or rack-mount versions, IBM said.

alone, IBM said.

The short-haul modem, the IBM 5611, transmits data at distances up to 16 miles. It supports half- and full-duplex synchronous data transmission at 2,400, 4.8K, 9.6K and 19.2K bit/sec. The four-wire IBM 5611 can be used in point-to-point applications or with four tributary modems in a multipoint application.

The product is available in stand-alone or rack-mount versions. The product's diagnostic capabilities include local self-test, local loop-back test, loop transmit test and remote loop-back test.

The stand-alone IBM 5696 costs \$8,000, and a rack-mount version sells for \$8,300. The IBM 5695 sells for \$4,000, and its rack-mount version costs \$3,300. The IBM 5611 costs \$595, and its rack-mount version costs \$550.

For additional information, IBM is located at 900 King St., Rye Brook, N.Y. 10573.

Digilog net management out for DEC Microvax

MONTGOMERYVILLE, Pa. — Digilog, Inc. has introduced a network analysis and management system that runs on Digital Equipment Corp.'s Microvax supermicrocomputer.

The Digilog Network Analysis and Management System is said to provide alarm notification, local and remote diagnostics and critical network path control.

The product's data base reportedly supplies performance history, vendor references, device information, network link data and interconnection specifications. The system features automatic processing and notification of alarm conditions from any point on the network, according to

the vendor.

The package is said to supply unselectable alarms, automatic circuit identification, alarm descriptions and date-time stamp to a console and printer. The network analysis tool reportedly supports up to three local or remote core consoles.

The package's management and analysis reports include activity summary log, trouble tickets, trouble history summary reports and an inventory management facility, the vendor said.

The Digilog Network Analysis and Management System costs \$48,000.

For more information, Digilog is located at 1570 Welsh Road, Montgomeryville, Pa. 18906.

Timeplex offers two-task multiplexer for data links

WOODCLIFF LAKE, N.J. — Timeplex, Inc. has announced a combination statistical and time-division multiplexer for wideband links operating at up to 64K bit/sec.

Multiplexer ITM48 reportedly supports up to 48 ports over point-to-point data links. As a statistical multiplexer, the device supports asynchronous and half-duplex synchronous transmission at up to 9.6K bit/sec.

The time-division multiplexing capability reportedly provides transparent handling of synchronous protocols through 44 ports at up to 38.4K bit/sec.

The bandwidth can be dynamically allocated or permanently assigned

on a per-port basis, according to Timeplex.

Network manager

A network manager can reportedly mix time-division multiplexers and statistical ports. The network manager can be programmed to sound an alarm whenever data link synchronization is lost, according to the vendor.

The product costs \$4,600 for a unit with four time-division multiplexers and four statistical ports and a standby data link.

For additional information, Timeplex can be reached at 400 Chestnut Ridge Road, Woodcliff Lake, N.J. 07675.

COMMUNICATIONS

Canadian message net connects 29 institutions

Conforms to CCITT X.400 standard

VANCOUVER, B.C. — CDNet has linked 29 Canadian institutions from Newfoundland to British Columbia on a message network that conforms to the CCITT X.400 message standard.

The network was established by the Distributed Systems Research Group at the University of British Columbia and Consortel, which was responsible for developing the soft-

ware for the network.

The research group reportedly has tested linking CDNet with a KDD, a Japanese message network also based on the X.400 standard.

Consortel was created by the Interprovincial Association for Telex and Telematics and funded by the Canadian Federal Department of Communications.

Consortel's goal is to create an information network to link Canadian institutions.

Consortel will now manage continuing research and development of CDNet.

Paradyne enhances network management system series

LARGO, Fla. — Paradyne Corp. has enhanced its Analysis 6500 series of network management systems and has added two modems to its product line.

Paradyne's Analysis network restoration facilities have been expanded to include an Intelligent Multidrop Automatic Call Unit (MCAU) and a Dual Call Auto Answer (DCAA) card.

The MCAU is said to restore service over dial-up lines automatically in the event of a failure in a point-to-point or multipoint leased line.

The device's switching logic enables multiple lines and remote drops

to be supported from a single unit, reducing the number of standby dial backup lines required, the vendor said.

The DCAA reportedly can be used whenever a primary leased line connection degrades or is disconnected.

New modems announced include the HDX 9600, a synchronous 9.6K bit/sec. modem that is said to have failback rates of 4.8K bit/sec. The half-duplex product was designed for point-to-point applications and uses quadrature amplitude modulation. The product includes automatic dialing and answering capabilities.

The FDX 1200 is a half-duplex, 1,200 bit/sec., asynchronous/synchronous modem that uses phase shift keying modulation. The product features reverse calling mode, automatic rate speed detection, tandem and shorthand dialing with tone and busy recognition and call progress monitoring.

Prices for network management packages range from \$12,500 for a 10-line system to approximately \$250,000 for a 500-line system. HDX 9600 costs \$1,995, and FDX 1200 costs \$345.

Paradyne can be reached through P.O. Box 1347, 8550 Umanston Road, Largo, Fla. 33460.

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PROTOCOL CONVERTERS

IBM Systems, Inc. has announced two single-channel protocol converters that enable asynchronous printers or terminals to access IBM System/34, 36 and 38 computers.

GS0 One attaches a serial asynchronous printer to one of the systems and enables it to mimic an IBM 5224, 5225 or 5254 printer, the vendor said. GS0 Two is said to connect an asynchronous terminal or micro-computer to a System/34, 36 or 38 and enables the device to emulate an IBM 5251 Model 11 terminal.

The products can be easily chained off a host CPU or a 5251 Model 12, 5254 or 5255 controller.

GS0 One costs \$1,495, and GS0 Two sells for \$1,595.

IBM Systems, Suite 505, 600 S. Dearborn St., Chicago, Ill. 60605.

SOFTWARE

Account-A-Call Corp. has announced a software package that reportedly helps determine a company's voice network needs.

The Interactive Traffic Analysis System calculates the number of trunks needed to meet a required grade of service at minimum cost, the vendor said. It determines customer needs for a number of services including Wats, foreign exchange lines and long-distance services.

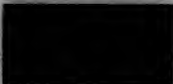
There are two versions of the product: One runs on IBM Personal Computer; the second works with IBM mainframes. The micro version of the package costs \$5,000, and the mainframe version costs \$12,000.

Account-A-Call, 4450 Lakeside Drive, Burbank, Calif. 91505.

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COMMUNICATIONS

TEST EQUIPMENT

Hannan Data, Inc. has announced a board-level product for IBM Personal Computers that enables a user to monitor an RS-232 line.

Hannan Serial Line Monitor can be used with half- or full-duplex data transmissions of up to 19.2K bit/sec. User-selected data in ASCII, EBCDIC or hexadecimal formats can be displayed on 21 lines.

Signals that can be displayed are Request to Send, Clear to Send, Data Terminal Ready, Data Set Ready, Car-

rier Detect and Ring Indicator. The board works in monitor data on keyboard command, monitor when triggered by data or signal change and simulate/transmit patterns to peripherals.

Data can be displayed on a screen or stored in a buffer or on a disk. Framing, parity and overrun errors are indicated by blinking characters.

The board costs \$1,466. *Hannan Data, 18732 148th Ave. N.E., Woodinville, Wash. 98072*

IVDM See page 61

telephone service from provision of telephone equipment) on the basis that the customer, the U.S. government, wants it." Tedesco said. He added that opposition from other CPE vendors to the Bell Atlantic waiver petition is without foundation because Bell Atlantic said it will obtain the equipment from unaffiliated vendors.

"We feel that we've fixed the application called Cen-

trex and are now looking at what other applications we can do. We think local-area networks are the next thing.

We've put the [data communications capability] in the central office. The key thing is using the existing copper wire. That is the strategic advantage with customers who are concerned about costs," Tedesco added.

Bell Atlantic's waiver appeal from the FCC on joint provision of Centrex with CPE cites the commission's

permission to allow AT&T Information Systems, AT&T's equipment arm, to resell basic telephone service with its telephone equipment.

On its current agenda, the FCC is also considering dropping the requirement that AT&T must maintain the subsidiary to market CPE. Bell Atlantic said it will support the competitive market that exists for FBI office-based equipment by offering equipment with its own Centrex service.

AUXILIARY EQUIPMENT

Ball-Corcoran, Inc. has announced the Gatekeeper Security System, a call-back verification system said to support up to 16 RS-232 ports.

The product reportedly can be programmed to call back users at a fixed location or direct password checking for traveling users. The direct-dial passwords are generated randomly through an automatic password generator that is said to supply more than 60 million passwords.

Through a call-routing feature, only one automatic dialing modem is said to be needed with the product. The Gatekeeper Security System enables an operator to reverse phone charges to call-back or direct-access users, the vendor said. The product logs any illegal access attempts to any serial port.

The average cost of a 16-port system is \$186/port.

Ball-Corcoran, 1024 Weber Road, Fort Collins, Colo. 80526.

Votac, Inc. has announced the VTR 6060 Voice Terminal, a voice recognition and synthesizer for use with personal computers and other ASCII devices. The product has a 160-word vocabulary.

The VTR 6060 includes a 3 1/4-in. floppy disk with 320K bytes of storage for saving messages or voice files. The 6060 responds to conversational English, according to the vendor.

Votac's Voice Key Software is said to let users incorporate voice capabilities into existing software applications packages without any modifications to the software itself. The VTR 6060 is a stand-alone voice I/O subsystem that includes chassis, power supply, microphone and speaker.

The VTR 6060 costs \$4,950.

Votac, 4487 Technology Drive, Fremont, Calif. 94538.



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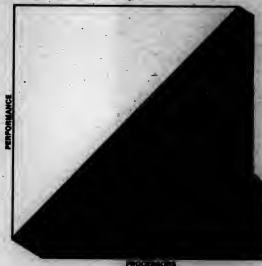
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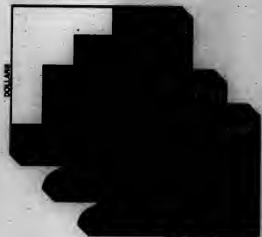
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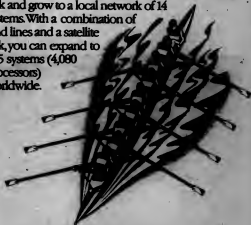
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COMMUNICATIONS

POLL from page 61

Homogeneity tests the uniformity of a given population. If all objects, people or situations are likely to be similar in principle, then there is homogeneity, and an "unstratified sample" would be used. If the objects or entities can be classified into areas likely to have some intrinsic difference, then a "stratified sample" would be used. This means that a sample must be taken from each

of the classes defined.

For example, if one wishes to determine the characteristics of traffic habits of asynchronous users throughout the U.S., one may want to define an "urban population" and a "rural population." On the other hand, it may not be necessary to stratify the population by male and female users, as both categories can be assumed to have the same characteristics.

Sample size is determined

by a set of formulas and depends on the degree of accuracy demanded. If the accuracy must be 100%, then the entire population must be consulted; this could be very expensive. If one can live with 95% accuracy, then only a small subset of the population needs to be consulted. This subset varies from 1%, for very large situations where the universe is in the one-million-population range, to 5% for a 10,000-population range to 20% in a

500-population range.

Once the size of the sample is determined accurately, the sample must actually be picked, namely, the individual representatives to be examined. One is not free to pick just any representatives, otherwise the results would be biased. Generally, one must choose a random subset; in a stratified environment, a random subset from each population is required. With the example above, one would not, de-

spite the convenience, be able to select the "urban users" from New York only; one would have to pick some from New York, some from Los Angeles, some from San Francisco and some from other cities.

Data communications uses

The bottom line is to save money. The following three concrete examples — among others that easily come to mind — will suggest how DP managers can use sampling techniques to save money. In addition, one should bear in mind that voice digitization is an example of sampling: It was shown that to reconstruct a continuous telephone voice signal made up of billions of continuous levels, one need only take 6,000 samples per second.

■ An international record carrier wanted to classify the 800,000 calls a day its switch carried into national destination percentages and to calculate the blocking factor to each nation.

To achieve this goal, the company executed a daily batch job requiring eight hours every night and several disk drives — an inefficient program that passed every one of the 800,000 transactions. Clearly, the firm could have applied sampling techniques and sampled 8,000 transactions with a program running for only 0.55 of one minute. The sampling techniques would have saved in millions of instructions per second and disk storage capacity.

■ A company wishing to determine the feasibility of receiving a one-way broadcast satellite signal in 500 business office locations sent out a battery of technicians to visit each of the 500 locations to survey line-of-sight conditions to a satellite. The firm could have surveyed fewer offices and reached the same statistically valid conclusions, while saving manpower and travel expenses.

■ An operations manager wanted to determine firsthand the type of problems experienced by his approximately 200 major network users.

A project was undertaken to contact each of the 200 users of considerable manpower expense. Again, a sample of approximately 50 users would have been statistically sufficient.

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SYSTEMS & PERIPHERALS

Sony adds unit to Sios disk system

By Ellen Belsky
On Washington Report

WASHINGTON, D.C. — Sony Communications Products Co., a division of Sony Corp. of America, officially unveiled the 105-1080 workstation processor for use with its newly announced optical disk system, intended for very large-scale document storage and filing applications, in-house publishing and computer-aided design.

At a briefing at the National Archives here, Sony officials said the intelligent workstation is part of the Sios Integrated Office System (Sios), which includes optical disk storage, document scanners and laser printers.

The Sios workstation engine incorporates a 16- or 32-bit microprocessor linked to five other 16-bit processors by a multiplexed bus system. The operating system is AT&T Bell Laboratories' Unix V.

The five subsystems control the display, a file-transfer network, compression/decompression of digital image data, printers and scanners and storage on a standard 7544-byte hard disk drive, expandable to 300M bytes, or optical disk unit, Sony officials said.

The workstation permits processing of text, graphics and visual images using the IBM-4715, a full-page high-resolution VDT. The display has a resolution of 180 dots/in., but information is stored in a 300 dots/in. format. According to the vendor, this allows images to be magnified up to four times without visible loss of resolution.

The Sios workstation provides windowing for multiple functions, a mouse interface and communications via an Ethernet local-area network, the vendor said.

Sony's 15-in., write-once optical disk, the WDM-SDLA, stores 1.64G bytes per side and costs \$300, the vendor said. The archival-quality disk will last for 30 years, Sony officials said, citing company tests.

Other products for the integrated Sios line include the WDM-3000 optical disk auto-changer for up to 50 disks, the WDC-3000 writable disk controller, the WDO-3000 writable disk drive and the IBM-1330 image scanner, which now operates at 5 pages/sec.

The company said the workstation and See 60WV page 63

DEC offers workstation for engineering market

MAYNARD, Mass. — Digital Equipment Corp. has introduced a color workstation for engineering and manufacturing markets that is based on the floating-point processor recently introduced with DEC's Microvax II.

The Vaxstation 530 — said to have the power of a VAX-11/780 — costs \$42,790 and includes 2M bytes of main memory, DEC's Q-bus network adapter Ethernet interface, the MicroVaxII operating system, a 33M-byte Winchester disk and dual 400K-byte floppy disks.

The unit features a Tektronix, Inc. 4125 graphics subsystem said to offer segment editing, zoom and pan capabilities and arc drawing.

The graphics subsystem includes a 19-in. Tektronix 4125 monitor with 1280 by 1280-pixel resolution, convergence accuracy of 0.5mm over the display area, the capability to display 256 colors from a palette

of 16 million, pick operations, pop-up menus, two-dimensional transforms and windows that allow a user up to 64 viewports.

The workstation can be linked to other VAX and PDP-11 computers as a node in an Ethernet local-area network, the vendor said. The Vaxstation 530 can also be used as a terminal within a multiterminal environment.

Options include up to 6M bytes of additional memory, a four-line asynchronous line controller and an external 31M-byte disk.

Graphics options include a three-dimensional wire-frame upgrade, 3-D solid shading upgrade and additional planes of video display memory.

The unit will be available midsummer of this year.

More information is available from DEC, Maynard, Mass. 01754.

Analyst calls IBM mid-range plans unclear

By John Seamus
On Staff

NEW YORK — Convincing users that its System/36 small-systems processor is of long-term strategic importance is what the IBM announcements of June 18 were all about, analyst Laura Stuart of the Boston-based Yankee Group said at a seminar here recently.

IBM, however, is putting the cart before the horse by releasing mid-range systems before its entire networking plan is in place, Stuart asserted in a talk on IBM's efficient automation strategy. She described the IBM Cabling System announced in June 1984 as the "Great Cabling System Bust" and pointed to the absence of an IBM local-area network. "IBM is in the iron business still," said Stuart, Yankee Group's director of small-systems planning.

With the System/36 focus, IBM's strategy See STRAT page 63

IBM enhances 4361 series processors

RYE BROOK, N.Y. — IBM has announced extended capabilities for its 4361 series processors.

Enhancements were made to the Workstation Adapter for the 4361. They include a distributed function terminal mode of operation that provides up to four concurrent host sessions, eight colors, extended highlighting and programmed symbols on the IBM 5270 Personal Computer and support of the Models 34 and 36 with the IBM 3280 Plasma Monitor.

Additional enhancements to the Workstation Adapter are said to include attachment of the 5270 PC/3 and 5270 PC/4X with full graphics functions, support of user-selectable printer assignment and support of the IBM 3263 printer Models 3 and 13.

No charges apply except for customers who install the communications adapter enhancement on other than new production machines.

■ Gould unveiled the Sci-Clone/32, a model processing system based on the firm's Concept/32 superminicomputers/79

■ A cable-through tape drive for IBM System/36 and 34 users was announced by Interface Data/79

■ Hewlett-Packard cut the price on its HP 7580 line of graphics plotters by 25%/82

■ Beehive International introduced a DEC VT220-type terminal/83

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Printers/Plotters/82
Graphics Systems/88

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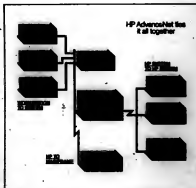
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Gould offers Sci-Clone/32

PORT LAUDERDALE, Fla. — Gould, Inc.'s Computer Systems Division has announced its Sci-Clone/32, a multiple-node processor system that uses the company's Concept/32 parallel processing minicomputers as nodes in a system linked by distributed integrated memory modules. The system runs under Gould's MPX/32 operating system.

The system was designed for applications such as flight simulation, signal processing, power plant simulation and energy management.

The basic configuration is a host-Concept/32 SC27, the Reflective Memory System memory module and a node unit cabinet that will allow for expansion up to four single-card SC27 nodes with one SC27 node processor for \$377,300.

The top-of-the-line system costs \$1,577,000 and includes a Concept 32/3780 host computer, the Reflective Memory System and two node units fully loaded to handle 16 Concept 32/3780 nodes with parallel processing units. All configurations include two 9-in. 340M-byte Winchester disk drives and one 100 in./sec., 1,600 bit/in. streaming tape drive.

More information can be obtained from Gould through P. O. Box 9148, 6001 W. Sunrise Blvd., Fort Lauderdale, Fla. 33310.

Sun announces workstation, price cuts

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. has announced its Sun-2/130 Sunstation workstation, a main storage subsystem for its Sun-2/50 Desktop Sunstation, current-on-board price cuts on its systems and memory and upgrades to its VME bus-based products.

The AT&T Unix-based Sun-2/130 Sunstation is a VME bus-based microcomputer workstation with a 19-in. display, a library of graphics utilities and a display manager. Mass storage options for the Sun-2/130 range from 71M-byte disks that cost \$4,900 to 700M-byte disks that cost \$36,800. Both 14-in. streaming cartridge drives costing \$3,000 with disk or \$4,000 if bought separately and 14-in. tape drives costing \$6,000 each are available for backup.

List price for a 32M-byte Sun-2/130 Sunstation is \$16,900, and it is available in configurations of up to 8M bytes, with memory available in increments of 2M bytes at \$1,600 per 1M byte. The optional mass storage subsystem for the Sun-2/50 Desktop Sunstation consists of a

71M-byte disk along with a 46M-byte 4-in. cartridge backup tape. It costs \$8,500.

Sun also announced that it is doubling the maximum memory available on its products to 8M bytes. The cost of 1M bytes of memory has been cut from \$4,100 to \$1,600, the vendor said. The cost of the 32M-byte diskless Sun-2/50 was cut to \$8,800 from \$13,400; the cost of the Sun-2/160 Color Sunstation with 2M bytes of memory was reduced to \$27,500, down from \$36,400; and the price of 71M-byte drive with a 46M-byte 4-in. streaming cartridge tape option available for the Sun-2/130, Sun-2/160 and Sun-2/180 products was reduced from \$10,800 to \$7,500.

In addition, the company unwrapped upgrades from the Motorola, Inc. 68010 processor to the 33-MHz Motorola 68030 processor for its VME bus-based products, the Sun-2/130 and Sun-2/160. The cost of the upgrade is \$4,000.

More information can be obtained from Sun Microsystems, 2550 Garcia Ave., Mountain View, Calif. 94048.

Interface Data unwraps tape drives for IBM CPUs

BOSTON — Interface Data, Inc. has announced cable-through tape drives for the IBM System/36 Model 8482 and the System/36 and 34 computers.

The controller was designed for use with the company's Series 5 tape drives and supports a 16-in. tape format. The cable-through feature is said to allow the tape drive to bypass the communications port and be configured so that the System/36 or 34 thinks it is communicating with a lo-

cal workstation. The package includes tape control software that facilitates data exchange with both IBM computers and non-IBM equipment, the vendor said. The Tape Libraries software has a timer that is said to allow operations to be scheduled in advance.

The Series 5 Model 96 tape drive is a self-threading, front-loading desktop unit that accepts 7-in. reels. It costs \$8,995. The Series 5 Model 90 is a reel-to-reel unit in a self-supporting

cabinet that supports both 900 bit/in. and 1,600 bit/in. recording densities and accepts 7- to 104-in. reels. It costs \$12,995. The Series 5 Model 90 self-threading front-loading unit accepts 104-, 8-, and 7-in. reels. It is available with either 1,600 bit/in. or 900 bit/in. data densities and costs \$10,795.

More information can be obtained from Interface Data at 18 Assembly Square Drive, Somerville, Mass. 02154.

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SYSTEMS & PERIPHERALS

TERMINALS

■ **Motorola/Four-Phase Systems, Inc.** has announced its PT45 intelligent terminal that works with the **Motorola, Inc. Series 5600** minicomputers.

The PT45 has a 14-in. screen with a choice of amber or green characters. Three styles of adjustable keyboards are available, the vendor said. Features are said to include a security keylock, a high/low intensity control and tilt/swivel capability.

The terminal is priced at \$2,100. **Motorola/Four-Phase Systems, 10700 N. De Anza Blvd., Cupertino, Calif. 95014.**

■ **Boekhoff International, Inc.** has released its ATL-220 terminal, said to be equivalent to Digital Equipment Corp.'s VT220 terminals.

The ATL-220 is a low-end model of the company's ATL-220E, formerly designated as the ATL-220. The ATL-220 is said to offer a 14-in. screen and five operating modes, including DEC VT220 seven- and eight-bit control modes and a VT100-compatible mode.

The user may modify communications protocols, interfaces, tab settings, printer controls, function key definition and keyboard parameters through menu-driven terminal operating features, the vendor said.

The unit costs \$296. **Boekhoff International, 4910 Amelia Earhart Drive, Salt Lake City, Utah 84116.**

PRINTERS/PLOTTERS

■ **BDS Corp.** has announced the BDS Laser 630/B, which is compatible with **Digital Systems, Inc. 630** daisy-wheel printer protocols and is said to be capable of accepting data through parallel IBM Personal Computer-compatible and serial RS-232C interfaces.

The Laser 630/B has nine type fonts in the basic configuration and can accept a maximum of 16 fonts. Optional font cartridges include one that reportedly allows a host processor to download user-defined fonts.

Printer features include combined underlining and boldfacing or italic and boldfacing, the vendor said.

The BDS Laser 630/B costs \$3,495. **BDS, 800 Maude Ave., Mountain View, Calif. 94043.**

■ **Southern Systems, Inc.** has announced its ST series of printers, which are compatible with IBM's **System/34, 36 and 38** and **Series/1** systems; **Texas Instruments, Inc.'s 990** family and **Business Systems computers**; and **Digital Equipment Corp. PDP-11** and **LSI** machines.

The models ST 450 and ST 900 printers come with either a **Data Products Corp. parallel** interface or a **Centronics Data Computer Corp. parallel** interface. An RS-232 interface is optional.

The ST 450, said to be a 450 line/min band printer, costs \$6,795. The ST 900, reportedly a 900 line/min band printer, costs \$7,995.

Southern Systems, 100 N. Belcher Road, Clearwater, Fla. 33575.

■ **Southern Systems, Inc.** has unveiled the **Mercurius 7450**, a low-end version of its **Mercurius 1** page printer.

The 7450 reportedly operates at 45 page/min, when using 5 1/4 by 11-in. paper. It has a duty cycle of 50,000 to 300,000 page/mo and is field upgradable to the 60 page/min **Mercurius 1**, the vendor said. It comes with an IBM mainframe interface.

The **Mercurius 7450** costs \$49,950. **Southern Systems, 100 N. Belcher Road, Clearwater, Fla. 33575.**

■ **Hewlett-Packard Co.** has announced that it has lowered the prices of its HP 7580 family of drafting plotters by an average of 25%, effective immediately.

The HP 7580B has been reduced from \$13,900 to \$9,900, the company said.

Also reduced is the HP 7585B, from \$16,900 to \$12,900, and the HP 7595B, from \$21,900 to \$16,900.

HP, Inquiries Manager, 1680 Embarcadero Road, Palo Alto, Calif. 94303.

■ **Test & Measurement Systems, Inc.** has released its TT-35 video printer for use with **Tektronix, Inc. Logic Analyzer** models 1346, DAS 8166 and 813/236.

The thermal printer gives a hard

copy on white thermal paper from a CRT display. It prints any CRT image generated by the measuring instruments in 16.7 sec., the vendor said.

The TT-35 is priced at \$1,200. **Test & Measurement Systems, Suite 301, 349 Cobalt Way, Sunnyvale, Calif. 94086.**

■ **Pacit, Inc.** has released a four-color printer, which can handle text and graphics, for use with micro and minicomputers.

The C7600 is said to print dual-resolution graphics at speeds of 2,400 dot/sec., draft-quality text at 400 char./sec. and near-letter-quality text at 100 char./sec. A fanfold or cut-sheet tractor feed are standard. The unit costs \$2,495.

Pacit, 9 Executive Drive, Merrimack, N.H. 03054.

GRAPHICS SYSTEMS

■ **Chromatix, Inc.** has announced its CX 1280 Colorgraphic Display System, which supports **Digital Equipment Corp.'s VMS** and **AT&T's Unix** operating systems.

The CX 1280 base system includes four single-buffered image planes, CX 1280 resident firmware, a 1,280-by 1,024-pixel resolution monitor and an engine that processes 500,000 fully transformed vectors per second. The basic unit costs \$24,995.

Chromatix, 2558 Mountain Industrial Blvd., Tucson, Ariz. 85704.

SYSTEMS & PERIPHERALS

STUART from page 75

gy is "install today and rationalize tomorrow," Stuart said.

Although System/36 is inexpensive and easy to use, she noted that it has a 16-bit architecture with a limited processing range. "Right now five or six System/36 users using Displaywrite will bring a high-end system down," she said. With the improvements announced June 18, "nine to 11 users will take the system down. That's not a very significant improvement," she said.

The System/36 Personal Computer, priced at approximately \$7,000, that IBM announced on June 18 offers 75% of the performance of the former low-end System/36, she noted. Disk speed is a constraining factor, she added. The System/36 Personal Computer can run PC-DOS with the System Support Program (SSP), but the PC-DOS application must be suspended for the machine to get into SSP, she said. She called that co-resident feature more significant for IBM than for users.

"We predict a real extension of the System/36 product line later this year," Stuart said. The product will support an SQL front end to the System/36 file system, a feature Stuart said will round out System/36 by offering data base management system access.

"Can IBM improve System/36 performance to

run a [data base management system] in a multi-vendor environment?" Stuart asked rhetorically. "That remains to be seen. Until users see a workable QA package or a workable extension to the product line upward, some skepticism is deserved." She noted that the IBM 8100 distributed processor was IBM's former strategic QA product.

"Merging the successful with the endangered"

With the announcement of the 3270 Personal Computer AT, IBM is "merging the successful IBM Personal Computer and the endangered 3270 environment. IBM does not want to lose its 3270 terminal end users," Stuart said, noting that several million such terminals are installed. "A hybrid 3270 and Personal Computer product will result," she predicted.

Generalizing about the announcements, Stuart said, "IBM continued on a slow path of bringing its disparate systems into compatibility with its architecture." In the Yankee Group's view, IBM will exploit the installed base of System/36 in corporate QA environments.

Thus, IBM will eventually offer System/36 support for Distributed Office Support System (Diso), its documents interchange package, Stuart said. IBM is working in its Rochester, Minn., plant on a long-range plan to combine System/36's object-oriented architecture and integrated data base

features into a System/36-like processor, Stuart maintained.

Although System/36 has certain advanced features, its shipments have been stable at approximately 3,000 per year, Stuart said. "We see [the] System/36 as relegated to niche accounts," such as small businesses and small manufacturers. "It will continue to be enhanced but not brought into the mainstream strategy." Instead, she said, "IBM will give the System/36 base a path to an alternative architecture, a non-370 architecture," she said.

Stuart predicted that IBM will eventually announce a token-ring local-area network. "System/36 will eventually have a local-area network connection so it can act as a file server," she said.

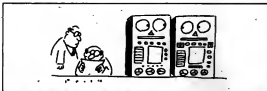
In viewing IBM's QA strategy, Yankee Group divided IBM's strategic office products into the following three areas:

■ Applications such as Displaywrite and Professional Office System.

■ Logical connection products such as Disom, Document Interchange Architecture, Document Content Architecture and Topview.

■ Physical connection products such as the Cabling System and the various hardware products.

"Where physical compatibility fails, construct logical compatibility; until then, a little applications compatibility will do," Stuart said, describing IBM's QA strategy.



"Ever got the feeling they're just using us?"

SONY from page 75

the model IPL-1345 laser printer will be available in the fourth quarter, and other parts of the Sioa line will be available in the first quarter of 1986, the vendor said.

Sony said the basic workstation hardware, including the micro-processor, keyboard, mouse and display, costs about \$60,000. Hardware for the integrated system, including

the workstation, printer, image scanner and optical disk system, will cost about \$80,000, Sony said.

The hardware will be sold to software and systems developers that will provide software and configure the system for users with mass storage needs, the vendor said. Applications software for the system is not available yet, officials added.

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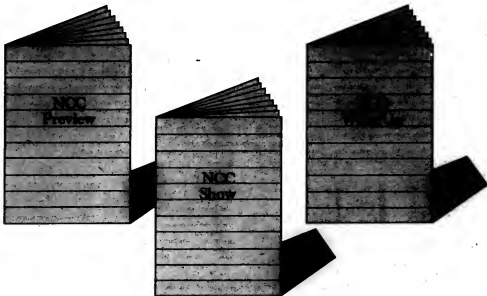
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COMPUTER INDUSTRY

Dataquest: Generalist amid specialists

FOURTH OF A FIVE-PART SERIES

By Kathleen Barlow
CW West Coast Bureau

SAN JOSE, Calif. — At a time when its competition is increasingly coming from specialists, Dataquest, Inc. remains one of the market research field's most confident generalists.

With operations in three continents and a staff of 130 analysts and researchers, Dataquest boasts a range of products and industry coverage that few of its competitors can match, according to company President E. David Crockett. Breadth provides Dataquest with an effective hedge against the industry's periodic downturns and recessions. "If one research area is in a slump, Dataquest can cut back and lay off staff with hardly a ripple in the rest of the operation," according to Michael Killen, president of Strategic, Inc., another market research firm here.

Breadth is also the key weapon with

which Dataquest hopes to combat a growing host of niche-seeking competitors.

How well Dataquest copes with these rivals will determine, to a large degree, whether the firm meets its current goal of 30% revenue growth during 1985.

Dataquest's competitors span a broad range of geographical areas and products:

Phoenix-based Instat Corp. focuses on semiconductors; Dallas-based Future Computing, Inc. covers the personal computer market; Software Access International in Mountain View, Calif., specializes in software; and the Boston-based Yankee Group targets telecommunications.

But Dataquest's most significant competitor, Crockett said, is Cupertino, Calif.-based Infocorp, founded in 1983 by three former Dataquest employees.

Infocorp, which now has 250 clients and a revenue of \$4 million that company officials say will double this year, competes head-to-head with Dataquest in the small systems and microcomputer areas,

said Skip Bushie, Infocorp's executive vice-president.

Bushie said Dataquest failed to do extensive basic research in the small systems and microcomputer markets. "Dataquest presents its results to clients in attractive packages and talks a good story, but they don't back their numbers with sufficient primary research, which requires talking to large numbers of end users, dealers and distributors," Bushie said.

Dataquest — a subsidiary of A. C. Nielsen Co., a Chicago-based media ratings conglomerate — was founded in 1971 and has since become the largest syndicated market research firm in the U.S., with an annual revenue estimated at \$35 million to \$40 million, company officials said.

David Norman, William O'Connell, and Ronald Miller became involved in market research in the late 1950s as employees of Creative Strategies, Inc. in San Jose. The three left to begin Dataquest, envisioning the firm as a "one-stop, automated information boutique," and that philosophy

See RESEARCH page 96

■ The often-overlooked international software market has greater growth potential for vendors than does the domestic market, a Software AG executive told Adapeo members/87

■ RCA and Sharp bucked the trend of the U.S.-Japanese semiconductor trade war by announcing a joint venture to produce Cmos chips in the U.S./82

Software services mart to grow 20%

By Charles Babcock
CW New York Bureau

NEW YORK — The computer software and services industry will continue to grow by 20% to 21% annually through the end of the decade, despite the current slowdown of hardware sales, said Peter A. Cunningham, president of Inpat.

Figures collected by Cunningham's Mountain View, Calif., market research firm, which were presented to the Association for Data Processing Service Organizations, Inc. here recently, indicated that software and services firms' revenues grew quickly in late 1983 and early 1984 but have slackened some since then.

"The industry grew at its fastest rate in 1984, 24%," with actual growth rates of 24% to 28% in the first half, Cunningham said. He called it genuine growth — few price increases

See GROWTH page 94

Financial software maturing Signifies broader trend in mainframe packages

By Charles Babcock
CW New York Bureau

NEW YORK — The market for mainframe software is maturing, and the companies that produce it are going to have to grow more sophisticated if they plan to survive, said Gerald C. Chichester, president of Focus Research Systems, Inc., a Dun & Bradstreet Corp. company in West Hartford, Conn.

Chichester made his remarks before 200 people attending the Association of Data Processing Service Organizations, Inc.'s (Adapeo) 12th annual software and services financial forum here recently. His comments were directed at vendors of financial applications software packages such as payroll, general

ledger and accounts receivable, but what is happening to financial packages signifies broader changes in the industry, he said.

"The older, more substantial solutions have been provided. The challenge now is for vendors to find new applications areas that they heretofore have ignored," he said.

Chichester's organization analyzed its data base of 10,000 IBM System 370 mainframe users — including 3080 series, 4300 series and the 3033 — and found that their purchases of financial applications packages peaked during the first quarter of 1984 and have gradually declined since.

The number of users of general ledger has increased for many years, but that trend leveled out in 1984, the survey indicated.

"I infer that all those who want it,

See ADAPSO page 94

Synapse execs withhold public comment on firm's demise

By Kathleen Barlow
CW West Coast Bureau

MILPITAS, Calif. — Synapse Computer Corp. quietly closed its doors last month, but company officials have refused to confirm its demise.

At first, officials at Synapse, a privately held unit transaction processing systems manufacturer backed by \$36 million in venture capital, said they would release a statement about the company's closure. Later, Mark Wilson, Synapse's vice-president of administration and finance, said, "We're a privately held company, and other than talking to our customers, we do not plan to make a public announcement about recent activities or about our future plans."

A Synapse employee, who asked not to be identified, confirmed that the company had locked its doors at the close of business June 14, and the remaining employees "are just Xeroxing resumes and packing personal belongings. The parking lot is empty, and the doors are locked," he said.

According to the employee, the closing came as

a shock to the company's 98 workers, who had been led to believe that a merger with aerospace giant McDonnell Douglas Corp. was imminent. "We didn't know a thing until Friday [June 14] at 2 p.m. when [Synapse Chief Executive Officer James Buchenowsky] called us all into a room and told us the McDonnell Douglas deal had fallen through the night before, and the company was closing," he said.

"We had slipped off."

The employee said that Synapse's workers were angry that a severance and vacation pay package that had been promised in the event of a shutdown was not forthcoming. "They paid us only through Friday, our last day," he said. "We felt ripped off."

McDonnell Douglas had been considering a merger with Synapse until late last week, said Glenn Marston, McDonnell Douglas' director of marketing and product planning in Irvine, Calif. McDonnell Douglas decided against the merger be-

cause it was seeking an entry-level system priced well below Synapse's \$350,000 entry-level systems, Marquest said.

According to insiders and analysts, a series of management and technical problems plagued the company during its five years of operation.

Synapse became mired in several problems that included shipping delays and a market crowded with competitors, said Gwen Peterson, an analyst with Dataquest, Inc., a market research firm in San Jose, Calif. "When the company started in 1980, only [Tandem Computer Corp.] was there, but now there are half a dozen competitors in the same niche," Peterson said.

Synapse shipped nine systems during 1983 and 1984 and had two active users — General Motors Corp. in Pontiac, Mich., and the police department in Nashville — according to Omer Serin, president of Ikon International, a market research firm in Los Altos, Calif. The other seven systems the company shipped were bug-ridden prototypes, Serin said.

COMPUTER INDUSTRY

RESEARCH

from page 65

still guides the company today, said David G. Jorgensen, Dataquest's current chairman.

The three gradually moved on. In 1982, Norman left Dataquest to found the San Jose-based Businessland chain of computer stores. Cogshall, who left the company in 1983, is now chief executive officer at Software Access International. Miller is vice-president of Boyden Association, a high-technology recruiting firm in Menlo Park, Calif.

Dataquest has a roster of 900 blue-chip clients that includes IBM, Prudential-Securities, Inc., 80 venture capital firms and the Big Eight accounting firms. Dataquest's first research forays tracked copiers, semiconductors, mobile homes and recreational vehicles. The first two divisions provided a launching pad for the company's expansion into the more lucrative areas of electronic printers and computer storage.

Dataquest subscribers pay between \$9,000 and \$36,000 annually for single subscriptions, which include industry-specific analyses and specialized studies aimed at Fortune 1,000 CEOs.

The firm's clients receive binders with information charting market size, order and shipment rates and pricing strategies. Clients also receive newsletters on subjects germane to their subscriptions, have telephone and in-person inquiry privileges and can attend one or more of Dataquest's 25 industry-specific annual conferences.

"Only game in town"

According to Curt Francis, vice-president for strategic planning at Advanced Micro Devices, Inc. (AMD) a Santa Clara, Calif.-based semiconductor manufacturer, "Dataquest is the only game in town for semiconductor data."

A Dataquest client for five years, AMD bases crucial marketing and strategy decisions on Dataquest's numbers, Francis said. Semiconductor firms like AMD need to understand and interpret the international market, from the shipping rate of graphics controllers to how fast companies will switch to digital telephony, Francis said.

Perq Systems Corp., a graphics workstation manufacturer in Pittsburgh, spends \$24,000 annually to subscribe to Dataquest's computer-aided design and manufacturing and small computer services, which it uses to evaluate competitors and construct a marketing plan, said Linda Richardson, Perq's marketing specialist. "Dataquest's numbers about our competition are very accurate," she said.

Though each Dataquest division is run separately and is responsible for its own profits and losses, the research activities of each group overlap, said Robert Saneckoff, vice-president of Dataquest's graphics and display terminals division.

"It's not hierarchical here. The company is run like a law firm with everybody working on several 'cases' simultaneously," Saneckoff said. Dataquest's semiconductor group, for example, would be "flying blind" if it could not cross-check information with the telecommunications, laser printer and terminals groups, accord-

ing to Saneckoff.

According to Crockett, Dataquest's philosophy is based on the premise that the price/performance ratios and growth rates of computer-related industries have predictable life cycles.

He claimed success in predicting IBM's 20% per year price reductions, based on the equivalent functions of products. "Our projections on IBM may vary two months based on parts availability," Crockett said, "but we understand IBM's product cycles, and, as IBM goes, so goes the rest."

During its 14-year history, Dataquest has had successes and failures. "Market research is not an exact science," Crockett conceded.

Because of this, Dataquest has miscalculated trends and technology breakthroughs, including the mercurial growth of under-\$5,000 laser printers and the sluggish expansion of robotics and office automation.

But the company claims significant successes. It predicted the last five downturns in the semiconductor

Nilsen Dataquest

1200 Nilsen Park Drive
San Jose, Calif. 95131

Founded - 1971

Employees - 330

1984 Revenue - \$35 million

1984 Profits - Not available

Specializations - Semiconductor technology

industry and Xerox Corp.'s 1972 loss of market share in the copier industry, according to Crockett.

Dataquest's success formula is based on aggressively filling niches that no one else has targeted, according to Jorgensen.

New services launched this year include a London-based Western European printer group that set a sales record during its first months of op-

eration by signing up a record number of clients. In the U.S., newly established groups include software, semiconductor materials and electronic publishing divisions, he said. In spite of Dataquest's successes, however, problems cloud the horizon. "It's difficult being No. 1," Jorgensen said. "Though we try harder, the bar goes up all the time. Clients

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Nilsen Dataquest

Semiconductor Industry	Semiconductor market and trends with company-by-company analysis	Vendor	\$13,800
Japanese Semiconductor Industry	Pacific Rim semiconductor market and vendors	Vendor	\$12,000
Semiconductor Equipment and Materials	Worldwide semiconductor equipment and materials production trends	Vendor	\$12,500
Computer Storage Industry	Computer storage industry and materials	Vendor	\$14,000
Robotics Industry	Companies and trends in several areas of factory automation	Both	\$13,800
Software Industry	Trends, markets and competitors in the software industry	Both	\$9,000
Business Computer Systems Industry	Trends, markets and competitors in small business and mainframe manufacturing	Both	\$12,000
Telecommunications Industry	Focus on public transmission equipment, customer premises equipment and North American telecommunications industry	Both	\$15,000
Terminal Industry	Technological reviews and forecasts for graphics and display terminals (two services)	Both	\$10,500 each
Financial Services	Investment issues newsletter for venture capital and investment banking communities	Not applicable	\$34,500

* Per year

Source: Dataquest, Inc.

COMPUTER INDUSTRY

International software mart showing high sales potential

By Charles Hulsebrook
CIV New York Bureau

NEW YORK — Many software manufacturers are missing the fact that the international market for software "is larger than [that of] the U.S. and growing at a faster rate," according to a Software AG officer.

Michael Jakos, senior international vice-president of Software AG in San Diego, told the Association for Data Processing Service Organizations, Inc. (Adapso) here that foreign languages, laws and other barriers presented difficulties for U.S. software companies selling overseas. But the biggest obstacle is their conception that the U.S. outstrips every other market for their products.

Jakos cited IBM's international software sales vs. those in the U.S. in 1982. IBM's international sales totaled domestic sales, \$768 million to \$936 million. In 1983, when reported in 1982 dollars, they had drawn closer together, at \$1.13 billion to \$1.29 billion. And in 1984, for the first time international sales exceeded U.S. sales when reported in 1982 dollars, \$1.97 billion to \$1.71 billion.

In reality, the increase in the value of the dollar shortchanged IBM part of the return on its international sales, since it deals in the currency of each country rather than in dollars, Jakos said. The same figures as reported by IBM in its 1984 annual report are as follows: \$768 million international to \$936 million U.S. in 1982; \$1.01 billion compared with \$1.29 billion in 1983; and \$1.49 billion vs. \$1.71 billion in 1984.

The five countries in which IBM does the bulk of its international business are Canada, the UK, West Germany, France and Italy. As software markets, these countries "are far less saturated than the U.S.," Jakos said.

Some rapidly developing third-world countries "are incredibly via-

ble markets," he added.

Proven software packages in the U.S. cannot automatically transfer their success overseas. Accounting laws differ from country to country, and legal systems, office automation packages and educational software all tend to follow local conventions rather than international standards.

"Hardware tends to be global," but software is local; it reflects local culture," Jakos said.

Nevertheless, international markets represent "a great untapped reservoir" for those with the drive to take advantage of them, he said.

Wang creates telecom group

LOWELL, Mass. — Wang Laboratories, Inc. recently announced the creation of a service arm focusing on the communications market that its founder and chairman predicted "will become a second major business" for the office automation company.

Wang Information Services Corp. (Wisc) will be a wholly owned subsidiary that will offer voice mail, telecommunications switching, data base and other services to users of Wang products.

Wang Chairman and Chief Executive Officer An Wang said he has set a revenue goal of \$100 million for the subsidiary by next year.

Wisc is scheduled initially to offer

Wang customers monthly rentals of nationwide electronic voice mail services.

Potential services

The other networking and distributed data processing services will be offered in the near future.

"Technology has become very complex for many users," Wang said. "Wisc has been organized to provide advanced but easy-to-use services without forcing the user to deal with the technology directly or make heavy investments."

Senior Vice-President Robert M. Bosman Sr. will head the Wisc subsidiary, reporting directly to Wang's CEO.

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For further information on the ASME subsystem, IXR, please write or telephone Mr. Shawn McLaren direct: (415) 941-4558.

After all, who says you can't teach a software system new tricks.

Wool.

AEA offers guide to Japan

FALLO ALTO, Calif. — The American Electronics Association (AEA) recently published a 72-page guide titled "Sources of Electronics Information in Japan."

The booklet provides information on Japanese electronics trade organizations; government, industry and academic publications; research laboratories; technical libraries; computer data base sources; consulting firms; and trade fairs and exhibitions.

Information for the publication was collected by the AEA's Japan Office in Tokyo, opened last spring. The AEA said one of the purposes of the office is to improve the quality and volume of information about the Japanese electronics market available to U.S. electronics industries.

The report costs \$45.

AEA can be reached through P.O. Box 10045, 2670 Hanover St., Palo Alto, Calif. 94303.

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 - 30. Medicine/Law/Education
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 - 60. Government — State/Federal/Local
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 - 95. Other User _____

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- 21. Director/Manager/Supervisor DP/MS Services
- 22. Director/Manager of Operations/Planning/Admin. Serv.
- 23. Systems Manager/Systems Analyst
- 31. Manager/Supervisor Programming
- 32. Programmer/Methods Analyst
- 36. OI/VP Director/Manager/Supervisor
- 38. Data Comm. Network/Systems Mgmt.
- 41. Engineer/Scientist/Arch/Technical Mgmt.
- 51. Manufacturing Sales Reps/Sales/Marketing Mgmt.
- 60. Consulting Management
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3. COMPUTER INVOLVEMENT

Types of equipment with which you are personally involved either as a user, vendor or consultant (circle all that apply).

- A. Mainframes/Supernovels
- B. Minicomputers/Small Business Computers
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COMPUTER INDUSTRY

RCA, Sharp plan joint chip manufacturing venture

NEW YORK — In the midst of an increasingly bitter U.S.-Japan trade war in the semiconductor industry, RCA Corp. and Sharp Corp. recently announced the first major U.S.-based joint venture between U.S. and Japanese integrated circuit vendors.

The companies will combine to build a \$300 million production facility for CMOS and very large-scale integration (VLSI) chips in Camas, Wash., a suburb of Portland, Ore. RCA will hold the controlling interest in the joint venture, called RCA/Sharp Microelectronics, Inc., with 51% of equity and five of nine seats on the board of directors of the new company.

The 270,000-sq-ft plant is expected to open late

this year and employ 650 people by 1990. The facility will include a design center and wafer fabrication center for the production of standard, custom and semicustom chips.

RCA President and Chief Executive Officer Robert E. Frederick said that despite the current semiconductor slump, the market for CMOS chips will grow dramatically through the end of the decade. Frederick predicted that the total annual worldwide sales of CMOS chips will grow 35% to 40% annually from its current level of \$2.5 billion to \$28 billion by 1990.

"There is no question of the critical nature of the industry," Frederick said. "But... we believe that electronics, and particularly CMOS, will grow

through the years and that we will grow with the industry. We are in it for the long haul."

"Separately, Sharp and RCA each have tremendous capabilities in CMOS LSI," said Atsushi Asada, senior executive director and group general manager of Sharp's Integrated Circuit Group. "We feel that combining our forces will be synergistic, resulting in considerably faster progress than could be attained without such a combination," Asada added.

The companies named RCA's Jon A. Shroyer president and CEO of RCA/Sharp Microelectronics. Shroyer had been division vice-president of LSI products and technology development for the RCA Solid State Division.

Downturn prompts layoffs at four Silicon Valley firms

By Matthew Horton
Ch West Coast Bureau

The computer industry slump cleared more caution in California's Silicon Valley recently as four more companies announced staff cutbacks.

Raychem Corp., a materials manufacturer in Menlo Park, Calif., will eliminate 300 jobs, effective immediately, as part of a cost-cutting move. Approximately 100 of the jobs are local; the remainder are overseas where Raychem does approximately 60% of its business, according to a spokesman.

Raychem, which manufactures a

broad array of products for the electronics, telecommunications and defense industries, employs 9,000 people worldwide.

For the third quarter ended March 31, Raychem posted profits of \$4.4 million on sales of \$164 million, compared with profits of \$8.6 million on sales of \$156 million during the same period a year ago.

Verbatim Corp., a floppy disk manufacturer in Sunnyvale, Calif., will cut 300 workers from its staff through attrition and layoffs by August.

A spokesman for the company said the cutbacks are the result of a slow-

down in orders and are not related to Verbatim's recent acquisition by Eastman Kodak Co. of Rochester, N.Y. Approximately 1,100 employees will remain after the cutbacks.

Verbatim reported a before-tax loss for the third quarter of \$4.5 million on sales of \$41.6 million, compared with a loss of \$4.5 million on sales of \$42.1 million for the same period in 1984.

Scientific Micro Systems, Inc., a microcomputer manufacturer in Mountain View, Calif., will cut 15% of its staff following the recent consolidation of its manufacturing operations. Scientific Micro Systems pos-

ed a \$175,000 loss during the first quarter on sales of \$6.7 million, compared with a profit of \$660,000 on sales of \$9.6 million for the same period a year ago.

Burrage Corp., based in Detroit, will trim 200 jobs from its Santa Clara, Calif.-based media products group, formerly a division of Memorex Corp. A Burrage spokesman said the company will attempt to move the displaced workers to other Burrage divisions. Burrage will relocate its 64-in. manufacturing operation overseas and its 24-in. operation to an existing facility in Santa Clara.

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The ICCs, a series of eleven, one-day regional conferences are convenient to where you work. The small, exclusive setting makes it easy for you to meet potential suppliers one-on-one. Hear what the OEM manufacturers have to say about new technologies, and remember, you may attend "by invitation only."

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IBM Software Notes

News for the DP professional



Real car leasing is just one of the financial services supported by the GE Credit Corp. network. IBM's Information/Management helps GECC identify network problems fast.

Information/Management Helps GE Credit Keep Network On Track

"We have happier customers," says Tom Dixon, manager of computing and telecommunication services for General Electric Credit Corporation (GECC) in Stamford, Conn. He is describing the use at GECC of IBM's Information/Management, Version 2—a licensed program that helps manage large data networks.

With assets of \$17 billion, GECC is one of the country's largest commercial lenders—active in retail credit, commercial leasing and mortgage banking.

And GECC operates a very large network: one with more than 2,000 terminals. The users, Mr. Dixon's customers, are in GECC field offices, retail stores and GECC client offices. They operate workstations, point-of-sale terminals and credit authorization terminals.

IBM's Information/Management program helps Mr. Dixon's staff use its computer to provide better service to customers. It enables the staff to record and retrieve all the data relevant to any network operating problems: the list of equipment at each site, the details of every communication link, a

complete record of every problem occurrence at each site, complete data on every type of equipment used in the network, and a detailed file on each vendor.

These data files can be searched to learn, for example, the history of a particular incident or of all previous occurrences of similar problems.

"We know our customer's environment," Mr. Dixon says.

"Over the telephone from GECC's customer support center, we can provide procedures to identify or correct the problem. We can see every change made to the telephone circuit serving that site. We can see all problems on that circuit, year to date. And we can talk to the telephone vendor in specific, geographic terms.

"We're automating ourselves so that our present staff

can handle a much larger network and a much greater rate of network change," Mr. Dixon continues. "We're already handling about ten times more devices than two years ago. And we're eliminating paperwork and becoming more responsive.

"Our next step will be to automate the management of network change with Information/Management."

Pacific Northwest Bell Creates Online System Fast

"This is a very large and complex system," says John Osterfeld of Pacific Northwest Bell Telephone Company. "Yet we were able to implement it with 12 programmers—half of them brand-new to programming—in a total of 13 months from preliminary design to an online production system.

"It would have taken at least twice as long without ADF."

Mr. Osterfeld, a system analyst for Pacific Northwest Bell, is referring to IBM's Application Development Facility (ADF). Designed for users of the IMS/VS data base/data communication system, ADF greatly reduces the

amount of programming required to create an application.

The programmers, under the technical guidance of Mr. Osterfeld, worked with ADF to develop a new version of the Customer Account Retrieval System (CARS) used by Pacific Northwest Bell representatives to call up account histories while answering customer telephone inquiries.

"We were up against a hard deadline. The application had to replace an older version within 13 months," he continues.

"Fortunately, ADF simplified the IMS programming to the point where we could meet the deadline using some people with

no programming experience at all.

"CARS now has several thousand users," Mr. Osterfeld points out, "and a very large data base. In our largest center, CARS handles 350,000 transactions a day—12 per second at peak times. So it is an application with a lot of demand on it. Execution has to be very efficient.

"And this version handles 28 I/O calls per transaction, compared to 20 or less in our previous system.

"In other words, the system as written with ADF is actually more efficient in execution than the conventionally programmed system it replaces."

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It's 2:00 a.m. You're testing a new application on a tight deadline. Suddenly, something—you don't yet know what—triggers an "abend."

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So, to keep IBM intermediate and large system customers up and running, the skills of more than 1,500 software service professionals are always on tap. Part of the IBM National Service Division, these professionals have the full power of special data bases at their fingertips.

You just call a special 800 number. At any time, 24 hours a day, seven days a week, you reach an IBM support center in Chicago, Boulder or Tampa. These locations service IBM's MVS, MVS/XA, DOS/VSE, VM and VSA system products and the licensed products associated with them. The centers also service licensed products for the Series/1 and the 8800.

Often the IBM Program Support Representative (PSR) taking the call recognizes the problem and gives the customer a remedy. To help the PSR, IBM maintains a data base of symptoms and solutions for known problems. If the problem requires a revision to the code, the PSR has a Program Temporary Fix (PTF) sent to the customer by the fastest possible method—in some cases, by a telephone link.

Over 50 percent of problems are solved by the PSR. But when a problem is a new one, the customer is put in touch with a program specialist, who often is located near the actual developers of the software product.

On the most severe problems—those which have halted processing—the first goal is to find some remedy, such as a bypass, that allows work to resume. The objective is to complete this within 24 hours.

The second goal for the program specialist is a permanent solution. When this requires a new PTF, the objective is to develop and test it within 14 days. The specialist re-creates



To consult a data base of software symptoms and solutions, IBM representatives at customer sites talk by phone to these specialists at the IBM support center in Chicago.

the problem, functionally tests the new PTF, and then runs "regression tests" to be sure the fix is reliable.

To close the loop, IBM periodically makes available service updates which combine all recent program changes.

Cross System Product Set—Version 2 Recently Announced

With the recent announcement of Version 2, the IBM Cross System Product Set becomes a strategic productivity tool for large systems, as well as for intermediate and distributed systems. This application generator includes three licensed programs: one for creating applications, one for executing them and a third that permits end users to query the VSAM or CMS files.

The Cross System Product Set runs under all operating systems for 300CX and 4300 systems and under DPF/XSP in the 8800. With this version, support is added for IMS/VS/DB and DIA as data bases for CICS/VS. In addition, it has been enhanced to run in systems with large networks of terminals.

Simplify MVS Installations

The IBM Custom-Built Installation Process Offering (CBIPO) is a simplified packaging of MVS. A CBIPO can cut the time to install an MVS system or subsystem from weeks to days.

Conventionally, a major system change involves a separate tape, documents and installation procedure for each program product.

With CBIPO, you first select the program products you intend to use with MVS. Then, with an automated process, IBM custom-builds an MVS system consisting of the ordered products in the form of distribution data sets.

The CBIPO also includes customized documentation that provides a step-by-step single installation path.

If you're interested in the growing information needs of business professionals, you'll be interested in *IBM Software Notes for the Business Professional and Manager*, an advertisement in recent business publications that featured these products:

- IBM's Query Management Facility (QMF). QMF is part of Dow Corning's end-user computing program. QMF lets employees do ad hoc queries on relational data bases.
- The Information Facility (IIF). Pratt & Whitney manufacturing experts create computer applications quickly, easily and in plain English.
- Info Center/1 is a new functionally integrated decision support product, combining and enhancing three popular IBM products: ADRES, AFL/DI, and FFS.
- The IBM Personal Decision Series (PDS) lets PC users perform a variety of tasks on corporate, departmental or personal data bases.

For literature on these products, check "Business Professional Software" in the coupon at the right.

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IBM

COMPUTER INDUSTRY

Sun Microsystems divides

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. recently announced a major reorganization that will split the company into four divisions. Former Vice-President of Engineering Bernard Lacerote has been promoted to executive vice-president and is responsible for all four divisions.

The Workstation division will continue to concentrate on the engineering, manufacturing and marketing of the existing Sun Microsystems product line of workstations for technical and scientific users.

The reorganized Software Products division will be responsible for the continuing development of Sun Microsystems software products, ac-

cording to the firm.

The East Coast Engineering division was formed with the purpose of establishing and running a Sun Microsystems technology center on the Eastern seaboard.

The Federal division, housed in a new facility in Milpitas, Calif., will address the special manufacturing and marketing needs of Sun Microsystems products to government organizations through both direct sales and OEM channels.

The Software Products division will be headed by former Director of Software Engineering Eric E. Schmidt and the Federal division by former Vice-President of Operations Russell Elk.

GROWTH from page 93

inflated the revenue figures. The growth rate slowed to the 10% level by the end of the year; throughout 1984 user expenditures rose to \$39.9 billion from \$32.2 billion the year before.

Not all segments of the industry have shared equally in the expansion. Software products companies, whose revenues grew 30% in 1984 compared with 41% in 1983, benefited the most. Software product revenues amounted to \$10.4 billion in 1984.

Processing services companies, which include facilities management, remote and batch processing, distributed data processing, time-sharing and network services, grew 16% in 1984 compared with 17% in 1983. Professional services companies

grew at comparable rates in both 1983 and 1984. They include systems design, programming, consulting, education and training and installation services.

Processing services amounted to \$15 billion in revenues in 1984, and professional services amounted to \$5.6 billion.

Turnkey systems, where a firm offers a combined hardware and software solution to a business problem, grew 32%, compared with 31% in 1983. Turnkey system revenues amounted to \$6.5 billion in 1984.

Vendors have engaged in "too much hype," creating disbelief among potential buyers of new products. Cunningham cited microcomputers and AT&T's Unix operating system as examples.

Manufacturers, believing the good times were rolling, overstocked their inventories. [Intel Corp.] representatives visited several customers and were distraught at the amount of inventory people were sitting on," Cunningham said.

The need to resolve questions of communications and integration before buying more technology has led to many more people getting involved in purchasing decisions. And more people means slower decision-making, he said.

The skepticism in the marketplace has been joined by doubt over what the economy will do next.

"When you have a lot of uncertainty, people don't like to make decisions," he added.

ADAPSO from page 95

have it," Chichester said.

Users are also more frequently purchasing multiple applications from the same vendor. In 1981, according to the Focus Research survey, Management Science Associates, Inc. (MSA) had sold 1.5 packages per user for the five financial packages surveyed. In 1983, MSA's sales of packages rose to 2 per user, and in 1985, to 2.4.

McCormack & Dodge Corp. had sold a similar 1.3 packages per user in 1981, 1.4 in 1983 and 1.9 in 1985. Odium Software, Inc., which only recently started offering financial applications, sold 1.9 per user in 1985, Chichester said.

The number of unit purchases has peaked, but the purchase size is growing as users buy multiple applications packages, he said.

To succeed in the face of these trends, Chichester said, software houses will have to integrate families of applications to make them more attractive to users, publish special editions of packages for particular industries, use specialized development techniques to get packages to market more quickly and provide easy-to-access, "borderless" information for users.

RESEARCH from page 98

have higher expectations today. They ask more technically sophisticated questions." And, even with 96 divisions, there are still holes in Datagroup's information, according to Jorgensen.

Datagroup's growth plans include refining industry demographics and launching new business and telecommunications systems divisions during 1986, Jorgensen said.

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